2.6x Pan-focus Zoom Progressive Scan CCD PZ7151/PZ7152

# NETWORK CAMERA

# User's Manual



VIVOTEK
www.vivotek.com

IP Surveillance

## Table of Contents

# Overview

VIVOTEK PZ7151 (PoE) /PZ7152 (WLAN), equipped with a progressive scan CCD sensor and pan-focus 2.6x optical zoom lens, is a high-performance network camera for indoor surveillance applications such as retail stores, offices or bank security. With progressive scan techniques, this network camera is ideal to offer clear, high-quality video and captures ultra-smooth images of fast-moving objects without any pixilated edges. Built into the camera is a 2.6x motorized pan-focus zoom module, which provides greater depth of field when viewing near or distant objects. With a 350-degree horizontal and 125-degree vertical range of capture, it effectively gives users a wide-area bird's view. Wireless and Power over Ethernet connection help reduce the cabling problems and ease the installation procedure. VIVOTEK PZ7151/PZ7152 also comes with the free-bundled, multi-lingual 16-channel recording software, which helps users to set up a powerful surveillance system.

## Read before use

The use of surveillance devices may be prohibited by law in your country. The Network Camera is not only a high-performance web-ready camera but also can be part of a flexible surveillance system. It is the user's responsibility to ensure that the operation of such devices is legal before installing this unit for its intended use.
It is important to first verify that all contents received are complete according to the Package contents listed below. Take notice of the warnings in Quick Installation Guide before the Network Camera is installed; then carefully read and follow the instructions in the Installation chapter to avoid damages due to faulty assembly and installation. This also ensures the product is used properly as intended.

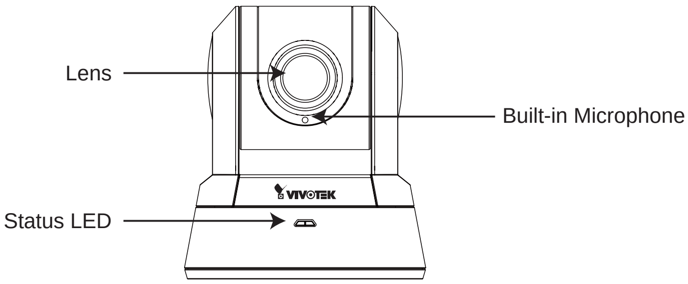
The Network Camera is a network device and its use should be straightforward for those who have basic network knowledge. It is designed for various applications including video sharing, general security/surveillance, etc. The Configuration chapter suggests ways to best utilize the Network Camera and ensure proper operations. For the creative and professional developers, the URL Commands of the Network Camera section serves to be a helpful reference to customize existing homepages or integrating with the current web server.

## Package contents

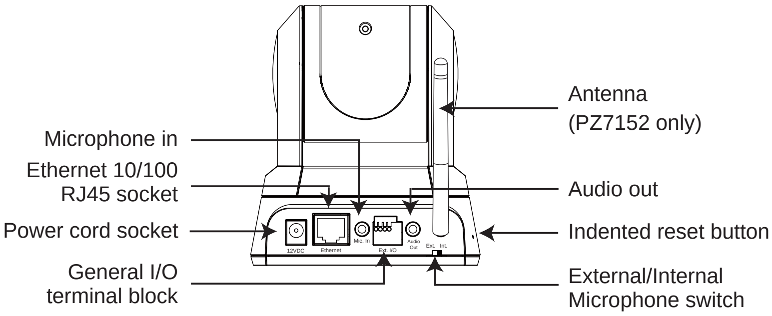
- PZ7151/ PZ7152
- Power adapter
- Software CD
- Quick installation guide
- Warranty card
- Screws
- Ceiling mount brackets
- Antenna (PZ7152 only)

# Physical description

## Front panel

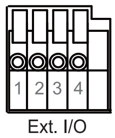



## Rear panel




## General I/O Terminal Block

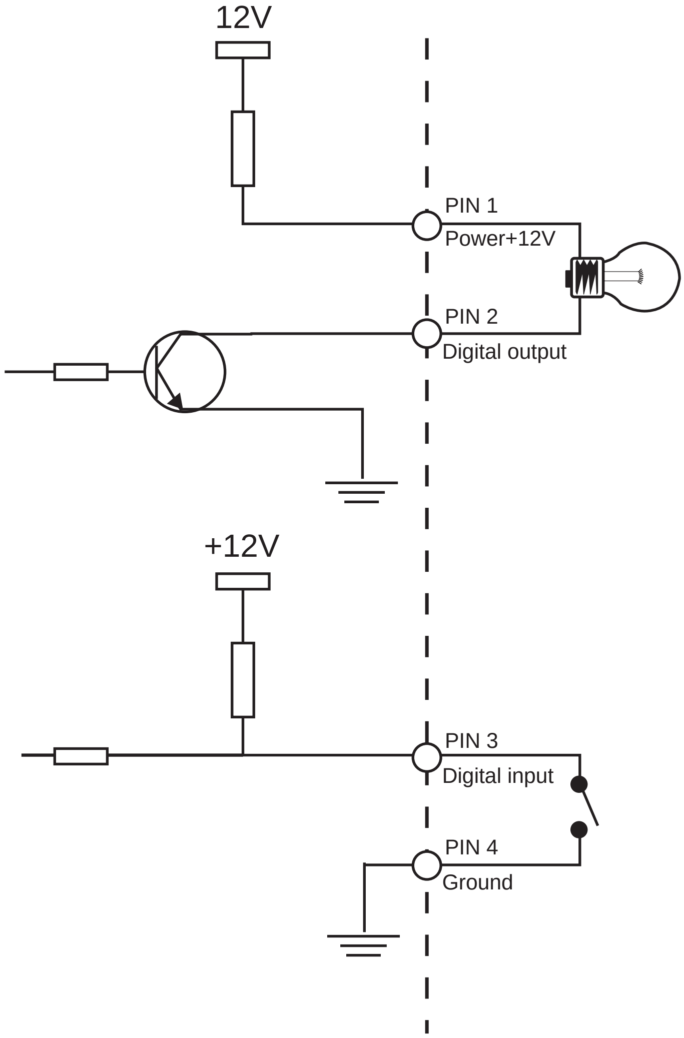
This Network Camera provides a general I/O terminal block which is used to connect external input / output devices. The pin definitions are described below.




| Pin | Name | Specification | Remarks |
|---|---|---|---|
| 1 | Power | 12VDC ± 5%, max. 1.5A | Max. rating 2A |
| 2 | Digital output | Max. 40VDC, max. 400mA, isolation 2kV | |
| 3 | Digital input | OPEN/Short-to-GND, isolation 2kV | Internal pull-up |
| 4 | Ground | | |

## DI/DO Diagram

Pin 1~4 are used to connect with digital input and digital output devices. Refer to the following illustration for connection method.

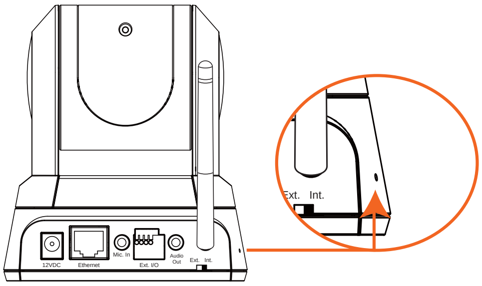



## Status LED

The color of LED indicates the status of the Network Camera.

| Status LED Color | Description |
|---|---|
| Blinking red | Power is being supplied to the Network Camera. |
| Solid green | The Network Camera is booting up. |
| Solid green with blinking red in between | The Network Camera is trying to obtain an IP address. |
| Solid green and red | An IP address is successfully assigned to the Network Camera. |
| Solid red with blinking green in between | The Network Camera is working. |
| Blinking red and green | During firmware upgrade |

## Hardware Reset




There is an indented reset button on the side panel of the Network Camera. It is used to reboot the Network Camera or restore the Network Camera to factory default. Sometimes rebooting the Network Camera could set the Network Camera back to normal state. If the problems remain after rebooted, restore the Network Camera to factory default and install again.

Reboot: Press and release the indented reset button with a needle. Wait for the Network Camera to reboot.

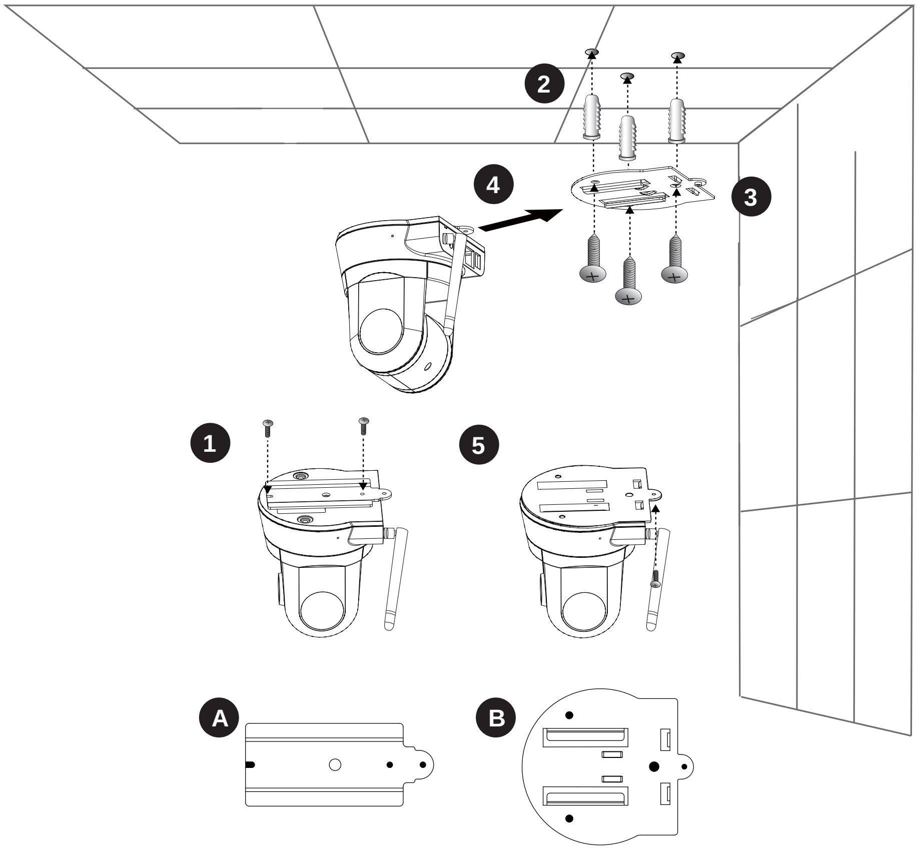
Restore: Press the indented reset button continuously for over 30 seconds until the status LED rapidly blinks red and green simultaneously. Note that all settings will be restored to factory default.

# Installation

## Hardware installation

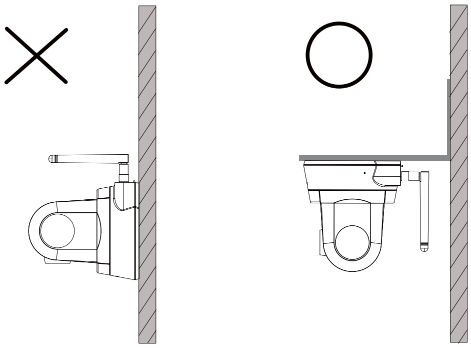
Follow the steps below to install the Network Camera to the ceiling:

1. Attach ceiling mount bracket A to the Network Camera and secure it with two small screws.
2. Drill three pilot holes into the ceiling; hammer the plastic anchors into the holes.
3. Fasten ceiling mount bracket B to the ceiling with three screws.
4. Slide the Network Camera into ceiling mount bracket B.
5. Secure ceiling mount bracket A and B with a small screw.




***NOTE***

► *If you want to intall the Network Camera on the wall, please use the wall mount bracket (optional, not included in the package).*

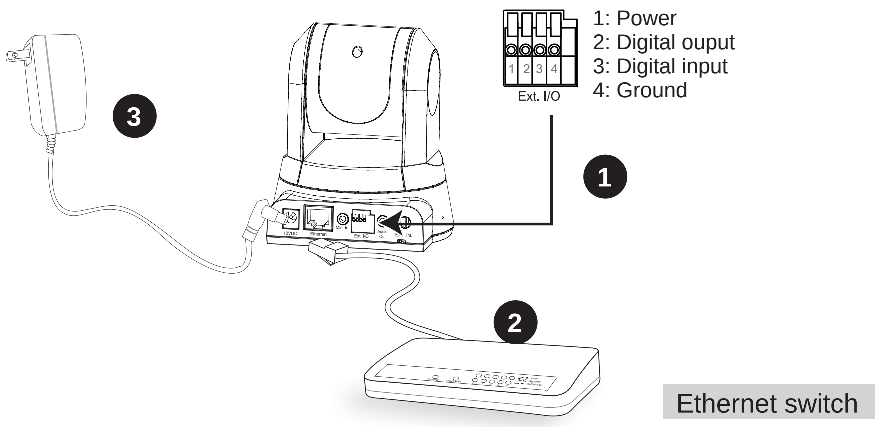


# Network deployment

## Setup the Network Camera over the Internet

This section explains how to configure the Network Camera to Internet connection.

1. If you have external devices such as sensors and alarms, make connection from general I/O terminal block.
2. Connect the camera to a switch via Ethernet cable.
3. Connect the supplied power cable from the Network Camera to a power outlet.

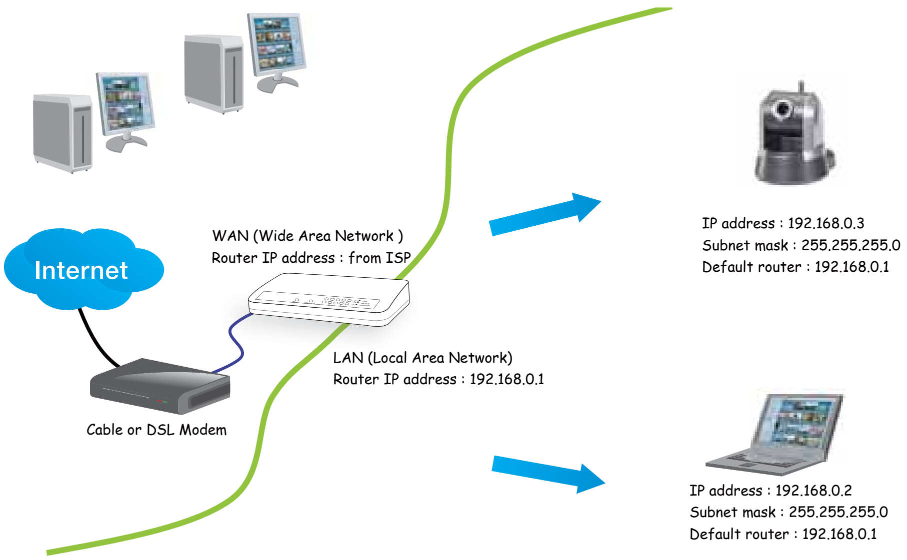



There are several ways to setup the Network Camera over the Internet. The first way is to setup the Network Camera behind a router. The second way is to utilize a static IP. The third way is to use PPPoE.

### Internet connection via a router

Before setting up the Network Camera over the Internet, make sure you have a router and follow the steps below.

1. Connect your Network Camera behind a router, the Internet environment is illustrated as below. About how to get your IP address, please refer to Software installation on page 12 for details.



2. In this case, if the Local Area Network (LAN) IP address of your Network Camera is 192.168.0.3, please forward the following ports for the Network Camera on the router.

- HTTP port
- RTSP port
- RTP port for audio
- RTCP port for audio
- RTP port for video
- RTCP port for video

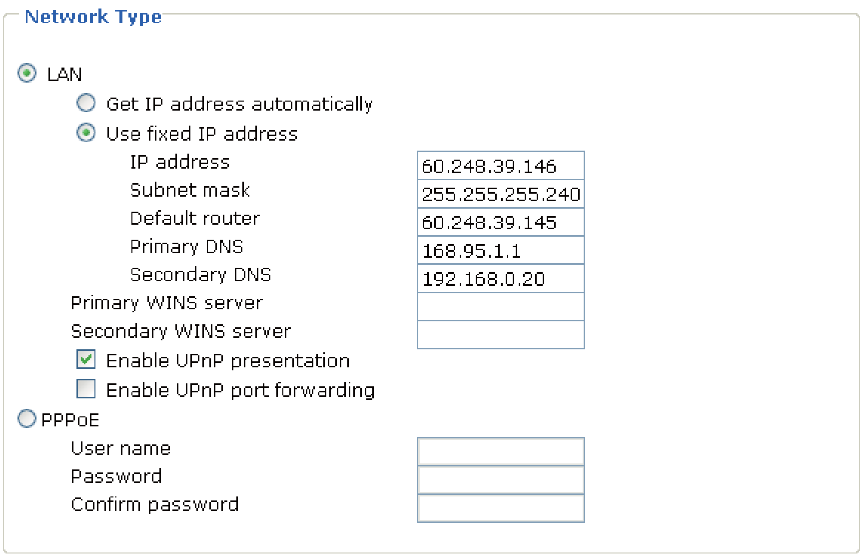
If you have changed the port numbers on the Network page, please open the ports accordingly on your router. For information on how to forward ports on the router, please refer to the user's manual of your router.

3. Find out the public IP address of your router provided by your ISP (Internet Service Provider). Use the public IP and the secondary HTTP port to access the Network Camera from the Internet. Please refer to Network Type on page 30 for details.

## Internet connection with static IP

Choose this connection type if you are required to use a static IP for the Network Camera and follow the steps below.

1. Set up the Network Camera in a LAN. Please refer to Software installation on page 12 for details.
2. Go to Configuration > Network > Network Type. Select LAN > Use fixed IP address.
3. Enter the static IP, Subnet mask, Default router, Primary DNS provided by your ISP.



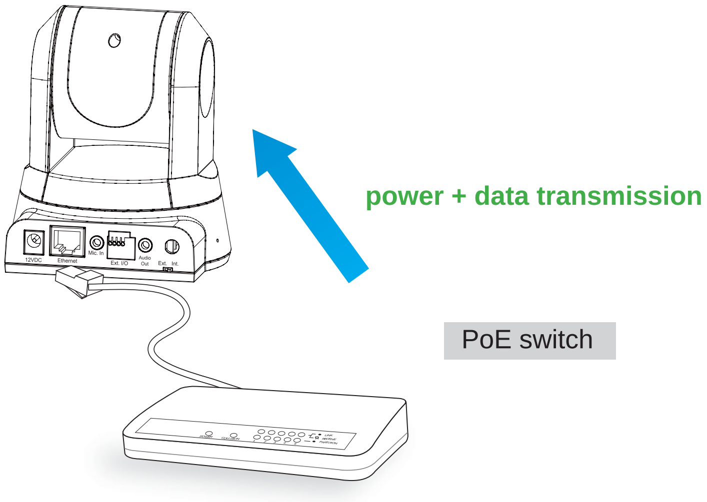

## Internet connection via PPPoE (Point-to-Point over Ethernet)

Choose this connection type if you are connected to the Internet via a DSL Line. Please refer to PPPoE on page 31 for details.

## Set up the Network Camera through Power over Ethernet (PoE) (PZ7151 only)

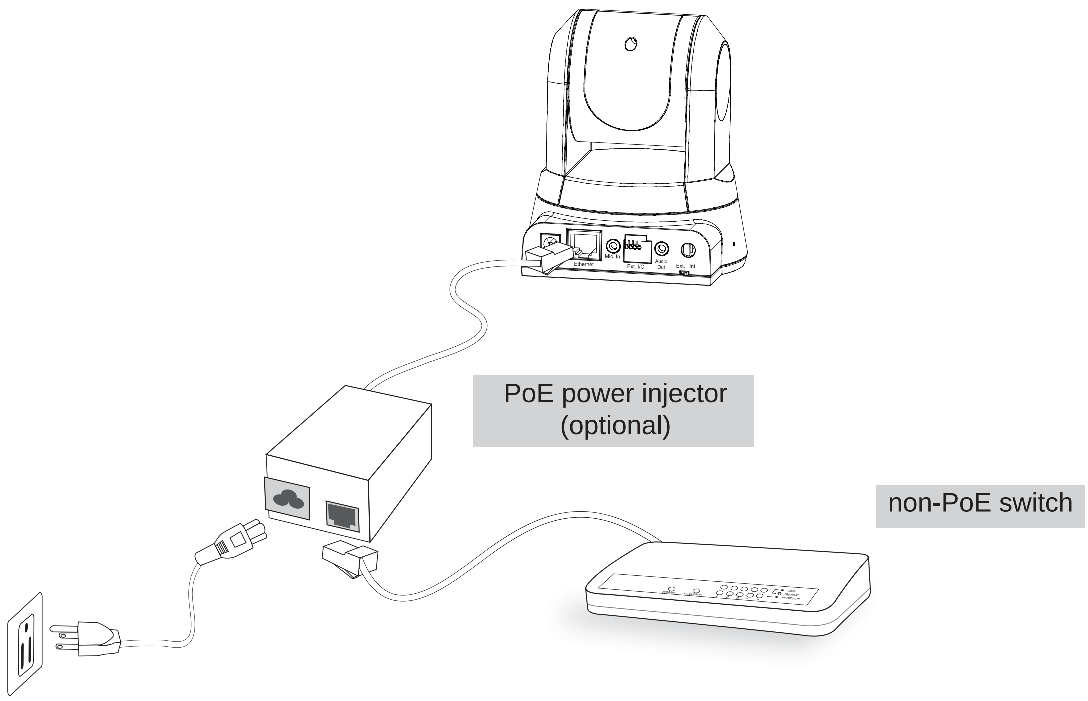
### When using a PoE-enabled switch

The Network Camera is PoE-compliant, which allows it to be powered via a single Ethernet cable. If your switch/router supports PoE, refer to the following illustration to connect the Network Camera to a PoE-enabled switch/router via an Ethernet cable.



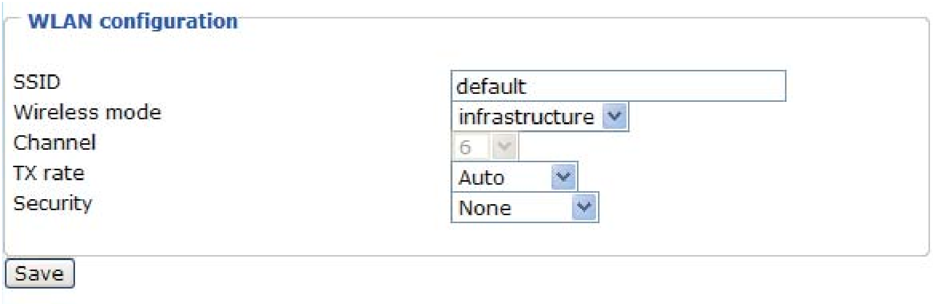

### When using a non-PoE switch

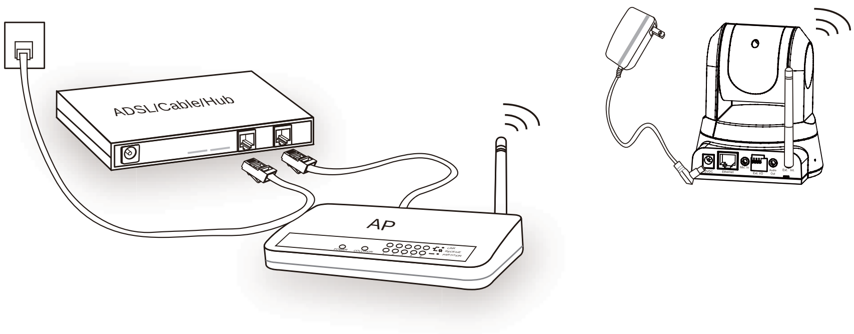
If your switch/router does not support PoE, use a PoE power injector (optional) to connect between the Network Camera and a non-PoE switch/router.



## Set up the Network Camera through Wireless Connection (PZ7152 only)

1. Check the SSID currently set on your wireless access point (AP).
2. Go to PZ7152's Configuration > Wireless LAN.
3. Type in the SSID consistent with the setting on your AP.
4. Select the Wireless mode as "Infrastructure".
5. Click Save.
6. Pull out the Ethernet cable.
7. Power off the camera.
8. Power on the camera.




**NOTE**

► *SSID, abbreviated from Service Set Identifier, is the name assigned to the wireless network. The PZ7152's factory SSID setting is set to "default".*

► *Select "Ad-Hoc" wireless mode if you want the PZ7152 to communicate without using an AP or wireless router.*

► *For detailed information about wireless connection, please refer to Wireless LAN on page 38.*

## Software installation

Installation Wizard 2 (IW2), free-bundled software packaged in the product CD, helps to set up your Network Camera in a LAN.

1. Install the IW2 under the Software Utility directory from the software CD.
   Double click the IW2 shortcut on your desktop to launch the program.

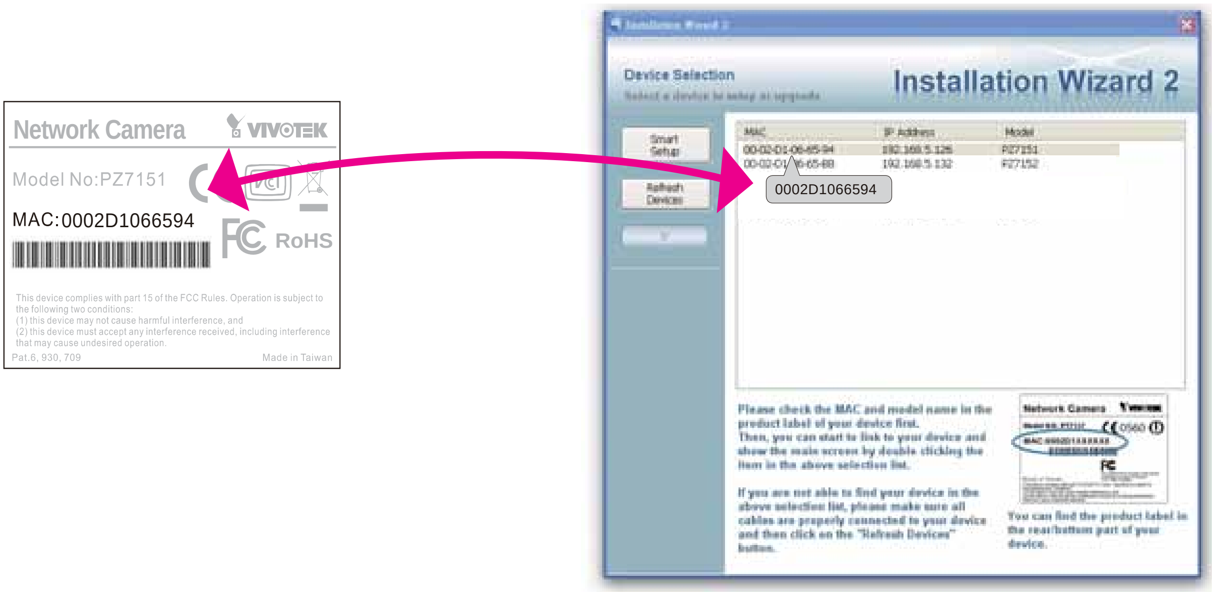



2. The program will conduct analyses on your network environment.
   After your network environment is analyzed, please click Next to continue the program.




3. The program will search all VIVOTEK devices in the same LAN.

4. After searching, the main installer window will pop up. Click on the MAC and model name which match the product label on your device to connect to the Network Camera.

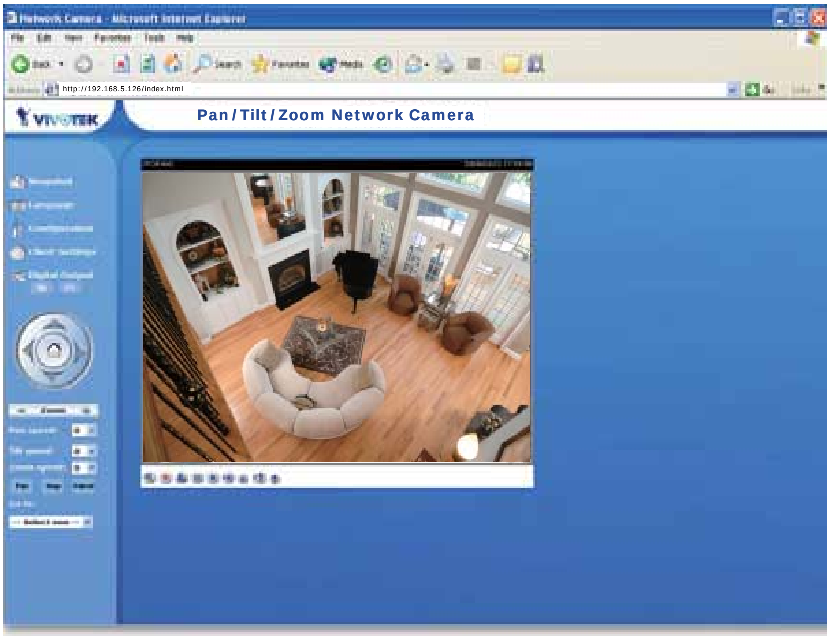


# Accessing the Network Camera

This chapter explains how to access the Network Camera through web browsers, RTSP players, 3GPP-compatible mobile devices, and VIVOTEK recording software.

## Using web browsers

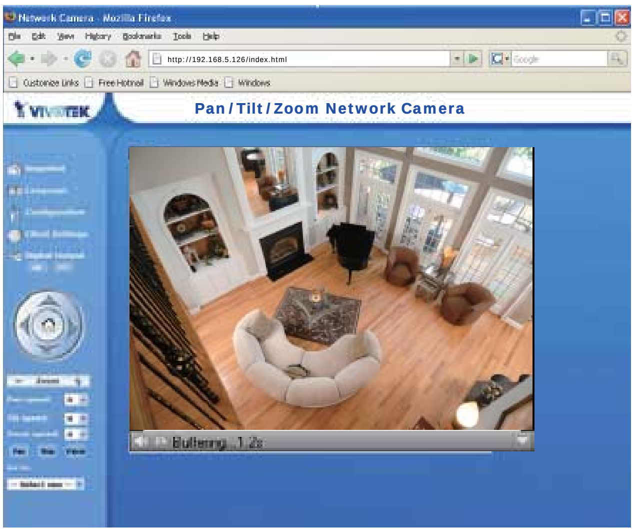
1. Launch your web browser (ex. Microsoft® Internet Explorer, Mozilla Firefox or Netscape).
2. Enter the IP address of the Network Camera in the address field. Press Enter.
3. The live video will be displayed in your web browser.




**NOTE**

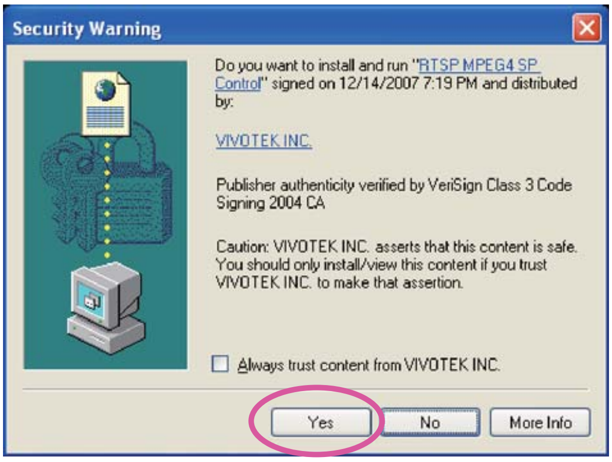
► *For Mozilla Firefox or Netscape users, your browser will use Quick Time to stream the live video.*



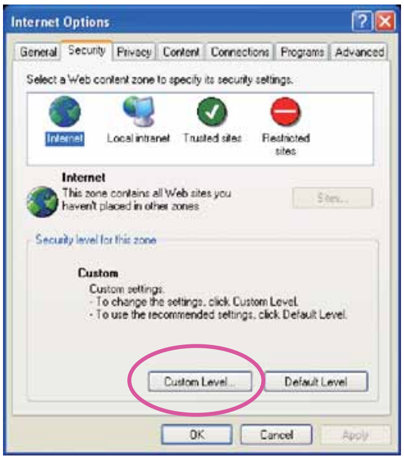
► *By default, the Network Camera is not password-protected. To prevent unauthorized accesses, it is highly recommended to set a password for the Network Camera.*
*For more information about how to enable password protection, please refer to Security on page 26.*

► *If you see a warning message at initial access, click Yes to install an ActiveX® control on your computer.*

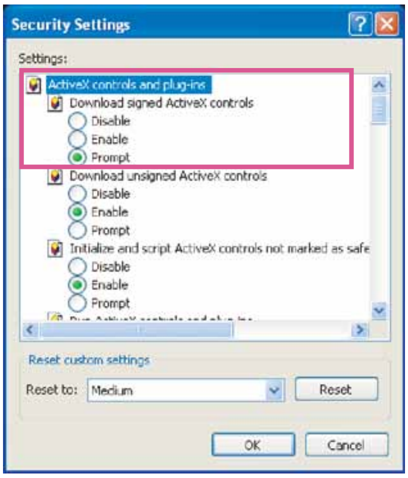



► *If you see a dialog box indicating that your security settings prohibit running ActiveX® Controls, please enable your ActiveX® Controls for your browser.*

*1. Choose Tools > Internet Options > Security > Custom Level.*




*2. Look for Download signed ActiveX® controls; select Enable or Prompt. Click OK.*



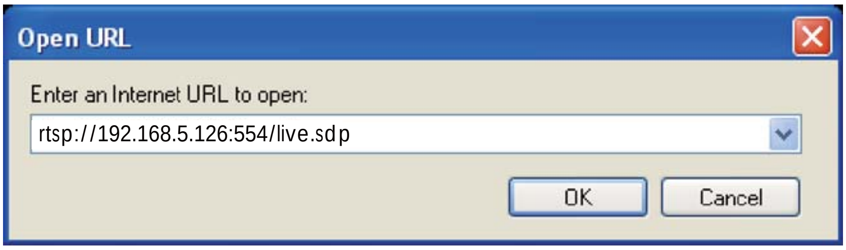
## Using RTSP players

To view the MPEG-4 streaming media using RTSP players, you can use one of the following players that support RTSP streaming.

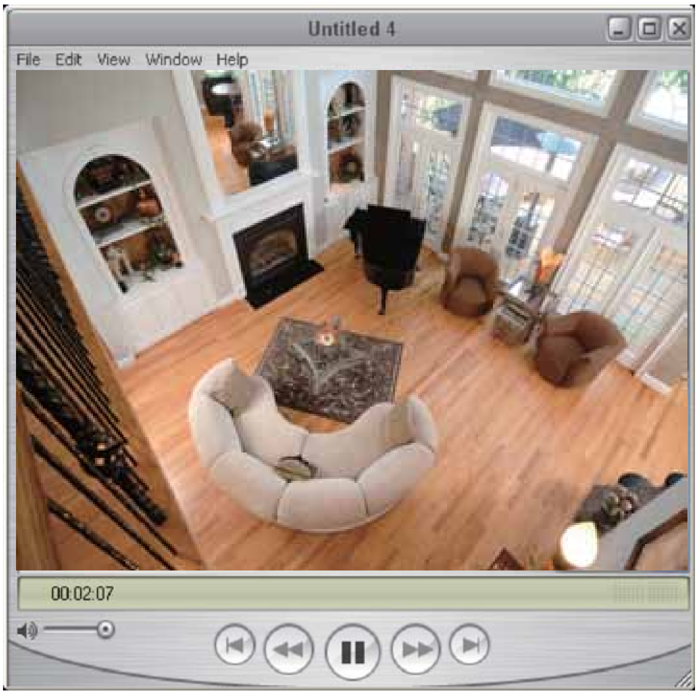
- Quick Time Player
- Real Player

1. Launch a RTSP player.
2. Choose File > Open URL. An URL dialog box will pop up.
3. Type the URL command in the text box.
   The format is rtsp://<ip address>:<rtsp port>/<access name for stream1 or stream2>

   For example:




4. The live video will be displayed in your player.
   For more information on how to configure RTSP access name, please refer to RTSP Streaming on page 36.



## Using 3GPP-compatible mobile devices

To view the streaming media through 3GPP-compatible mobile devices, make sure the Network Camera can be accessed from the Internet. For more information on how to set up the Network Camera over the Internet, please refer to Setup the Network Camera over the Internet on page 8.

To utilize this feature, please check the following settings on your Network Camera:

1. Because most players on 3GPP mobile phones do not support RTSP authentication, make sure the authentication mode of RTSP streaming is set to disable.
   For more information, please refer to RTSP Streaming on page 36.

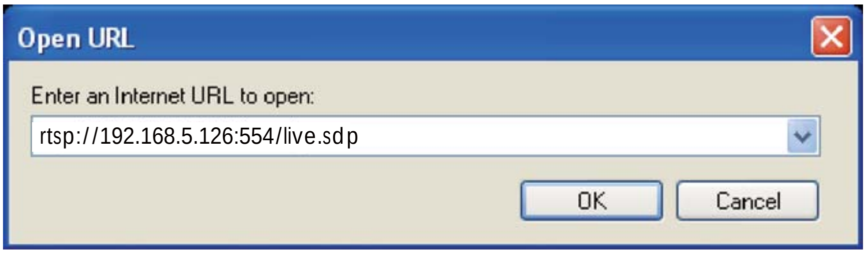
2. As the 3G network bandwidth is limited, you can't use large video size. Please set the video and audio streaming parameters as listed below.
   For more information, please refer to Audio and video on page 44.

| | |
|---|---|
| Video Mode | MPEG-4 |
| Frame size | 176 x 144 |
| Maximum frame rate | 5 fps |
| Intra frame period | 1S |
| Video quality (Constant bit rate) | 40kbps |
| Audio type (GSM-AMR) | 12.2kbps |

3. As most ISP and players only support port number 554 to allow RTSP streaming to go through, please set the RTSP port to 554.For more information, please refer to RTSP Streaming on page 36.

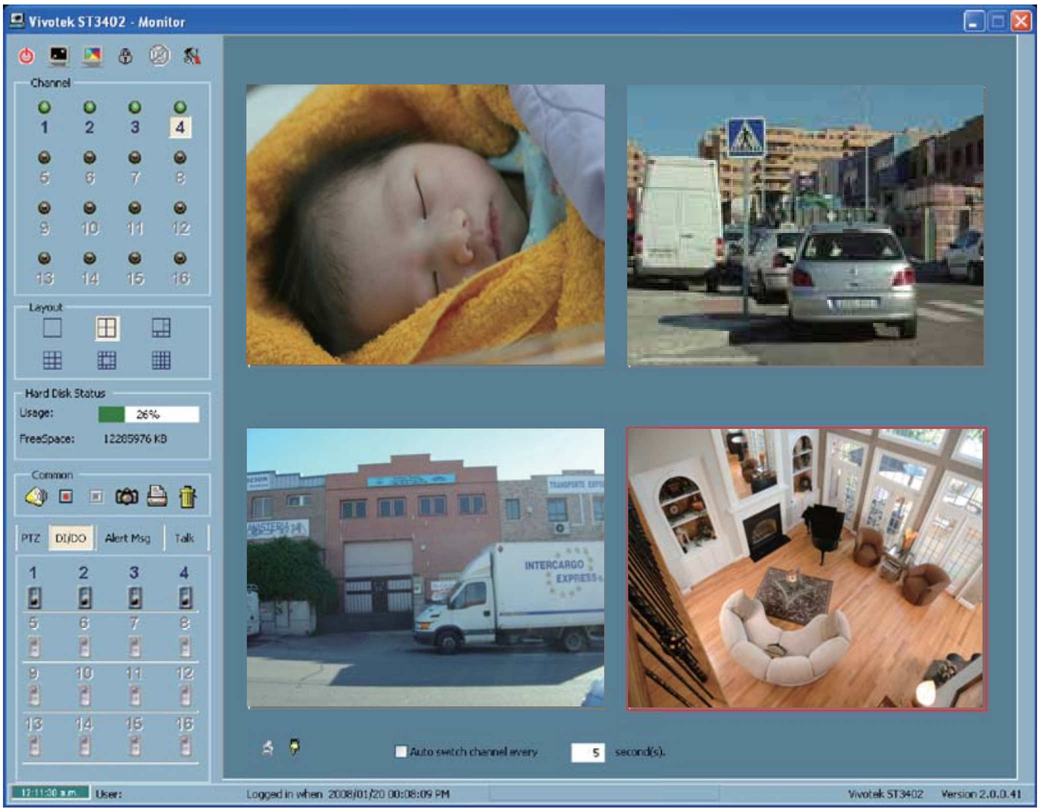
4. Launch the players on 3GPP-compatible mobile devices, (ex. Real Player).
   Type the URL commands in the player.
   The format is rtsp://<public ip address of your camera>:<rtsp port>/<access name for stream1 or stream2>.

   For example:



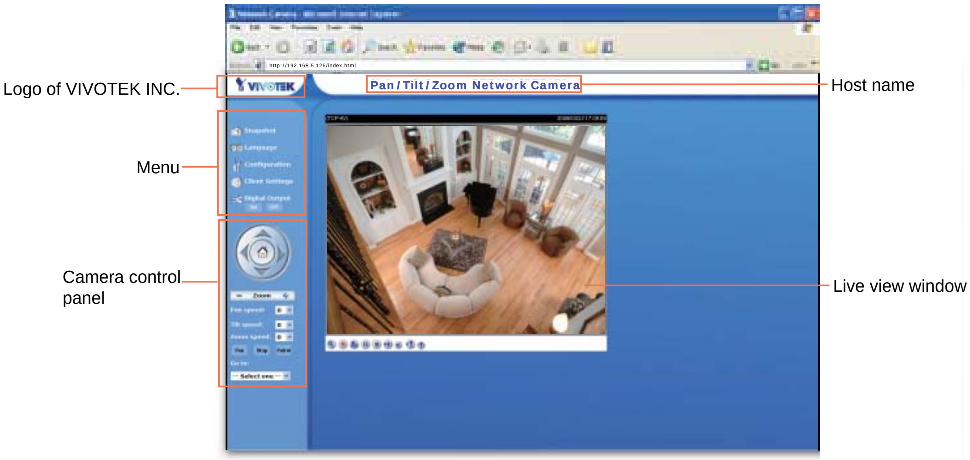
## Using VIVOTEK recording software

The product software CD also contains recording software, allowing simultaneous monitoring and video recording for multiple Network Cameras. Please install the recording software; then launch the program to add the Network Camera to the Channel list. For detailed information about how to use the recording software, please refer to the user's manual of the software or download it at http://www.vivotek.com.



# Main Page

This chapter explains the layout of the main page. It is composed of the following four sections: Logo of VIVOTEK INC., Menu, Host Name, and Live Video Window.




## Logo of VIVOTEK INC.

Click this logo to visit VIVOTEK website.

## Menu

Snapshot: Click this button to capture and save still images. The captured images will be displayed in a pop-up window. Right-click the image and choose Save Picture As to save it in JPEG (*.jpg) or BMP (*.bmp) format.

Language: Click this button to choose a language for the displayed interface. Language options are available in: English, Deutsch, Español, Français, Italiano, 日本語, Português, 簡体中文 and 繁體中文.

Configuration: Click this button to access the configuration page of Network Camera. It is suggested that a password is applied to the Network Camera so that only the administrator can configure the Network Camera. For more information, please refer to Configuration on page 24.

Client Settings: Click this button to access the client setting page. For more information, please refer to Client Settings on page 22.

Digital Output: Click this button to turn on or off the digital output device.

## Camera Control Panel

Pan /tilt control buttons: The direction buttons are for Left, Right, Up, Down, and Home functions. The Home button centers the camera.

Zoom: Click + to enlarge the subjects in the video. Click - to reduce the size of subjects in the video.

Pan /Tilt /Zoom speed: Adjust the speed of pan/ tilt/ zoom.

Pan: Click this button to start the auto pan. When the current position is Home or on the left side of Home, the camera starts panning from the current position to the left-most position, then to the right-most position, and finally backward to the original position. When the current position is on the right side of Home, the camera starts panning from the current position to the right-most position, then to the left-most position, and finally backward to the original position.

Stop: Click this button to stop the auto Pan and auto Patrol function.

Patrol: Click this button to command the camera to patrol between the preset positions on the Patrol List. After one patrol cycle, the camera returns to the original position.

Go to: Once the Administrator has determined the preset positions; you can aim the camera using this control. For more information, please refer to Camera control of Configuration on page 46.

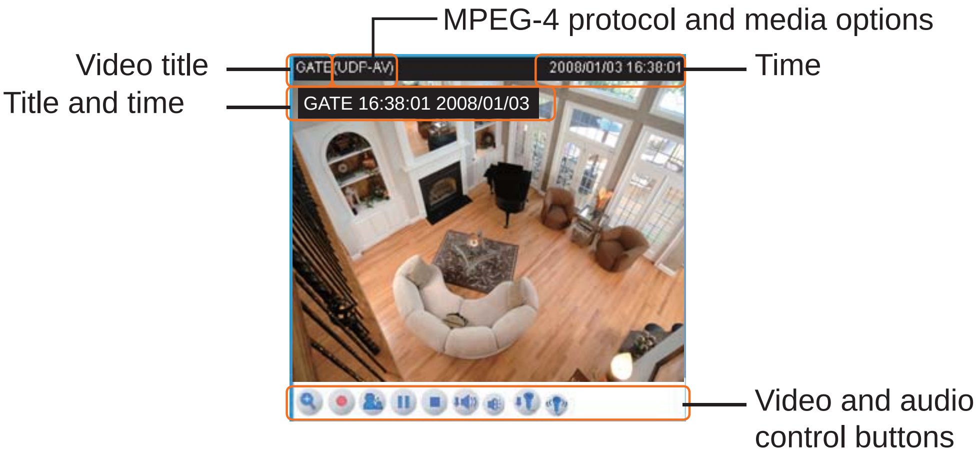
| Pan speed | Tilt speed | Zoom speed | |
|---|---|---|---|
| -5 | -5 | -5 | Slower |
| -4 | -4 | -4 | |
| -3 | -3 | -3 | |
| -2 | -2 | -2 | |
| -1 | -1 | -1 | |
| 0 | 0 | 0 | |
| 1 | 1 | 1 | |
| 2 | 2 | 2 | |
| 3 | 3 | 3 | |
| 4 | 4 | 4 | |
| 5 | 5 | 5 | Faster |

## Host Name

The host name can be customized to fit your needs. For more information, please refer to System on page 24.

## Live Video Window

**The following window is displayed when the video mode is set to MPEG-4:**




Video title: The video title can be configured. For more information, please refer to Video settings on page 44.
Time: Display the current time. For more information, please refer to Video settings on page 44.

Title and time: Video title and time can be stamped on the streaming video. For more information, please refer to Video settings on page 44.

MPEG-4 protocol and media options: The transmission protocol and media options for MPEG-4 video streaming. For more information, please refer to Client Settings on page 22.

Video and audio control buttons: Depending on the Network Camera model and Network Camera configuration, some buttons may not be available.

Digital zoom edit: Deselect Disable digital zoom to enable the zoom operation. The navigation screen indicates which part of the image is being magnified. To control the zoom level, drag the slider bar. To move to a different area you want to magnify, drag the navigation screen.




Start MP4 recording: Click this button to record video clips in MP4 file format to your computer. Press the Stop MP4 recording button to end recording. When you quit the web browser, video recording stops accordingly. To specify the storage destination and the file name, please refer to MP4 Saving Options on page 23 for details.

Talk: Click this button to talk to people around the Network Camera. Audio will come out from the external speaker connected to the Network Camera.

Pause: Pause the transmission of streaming media. The button becomes Resume button after clicking the Pause button.

Resume: Resume the transmission of streaming media. The button becomes Pause button after clicking the Resume button.

Stop: Stop the transmission of streaming media. Click the Resume button to continue transmission.

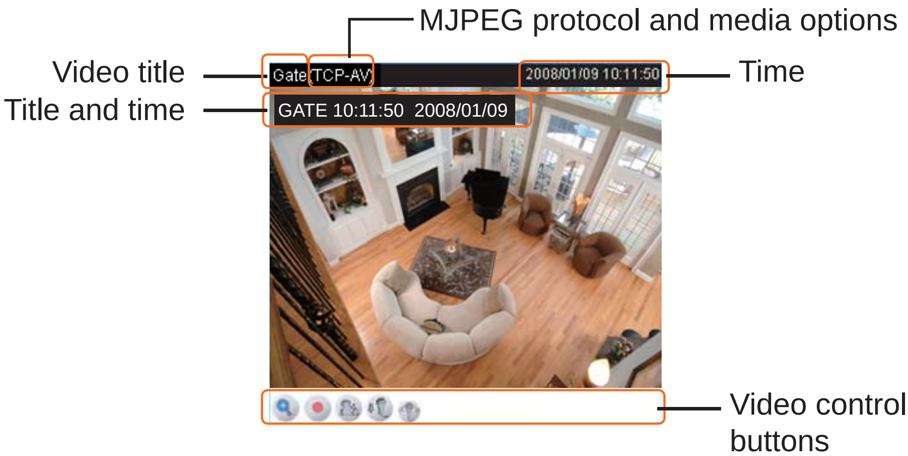
Volume: When the mute function is not activated, move the slider bar to adjust the volume at local computer.

Mute: Turn off the volume at local computer.

Mic Volume: When the mute function is not activated, move the slider bar to adjust the microphone volume at local computer.

Mute: Turn off the microphone volume at local computer.

**The following window is displayed when the video mode is set to MJPEG:**



Video title: The video title can be configured. For more information, please refer to Video settings on page 44.

Time: Display the current time. For more information, please refer to Video settings on page 44.

Title and time: Video title and time can be stamped on the streaming video. For more information, please refer to Video settings on page 44.

Video and audio control buttons: Depending on the Network Camera model and Network Camera configuration, some buttons may not be available.

Digital zoom edit: Deselect Disable digital zoom to enable the zoom operation. The navigation screen indicates which part of the image is being magnified. To control the zoom level, drag the slider bar. To move to a different area you want to magnify, drag the navigation screen.




Start MP4 recording: Click this button to record video clips in MP4 file format to your computer. Press the Stop MP4 recording button to end recording. When you quit the web browser, video recording stops accordingly. To specify the storage destination and the file name, please refer to MP4 Saving Options on page 23 for details.

Talk: Click this button to talk to people around the Network Camera. Audio will come out from the external speaker connected to the Network Camera.

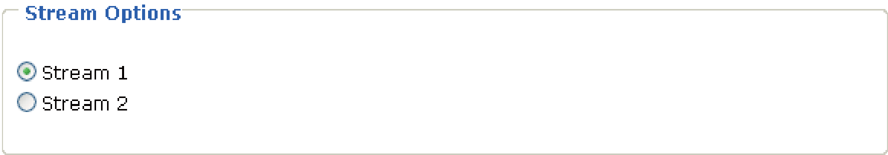
Mic Volume: When the mute function is not activated, move the slider bar to adjust the microphone volume at local computer.

Mute: Turn off the microphone volume at local computer.

# Client Settings

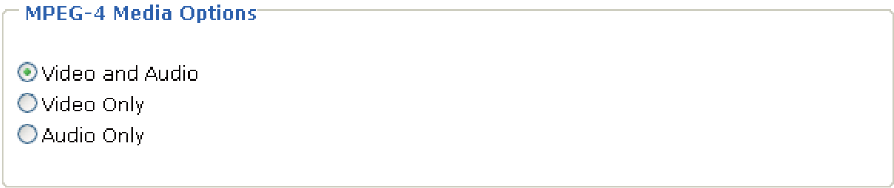
This chapter explains how to select the streaming source, transmission mode and saving options at local computer. It is composed of the following four sections: Stream Options, MPEG-4 Media Options, MPEG-4 Protocol Options and MP4 Saving Options. When completed with the settings on this page, click Save on the page bottom to take effect.

## Stream Options



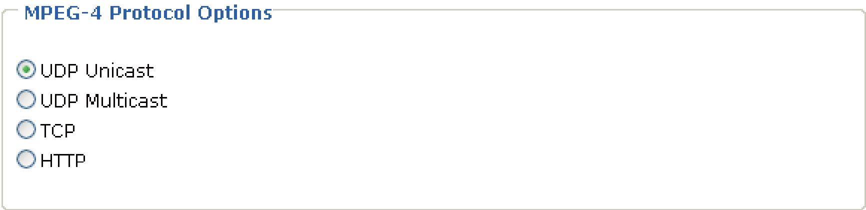

The Network Camera supports MPEG-4 and MJPEG dual streams. For more information, please refer to Video settings on page 44.

## MPEG-4 Media Options




Select to stream video or audio data. This works only when the video mode is set to MPEG-4.

## MPEG-4 Protocol Options




Depending on your network environment, there are four transmission modes of MPEG-4 streaming:

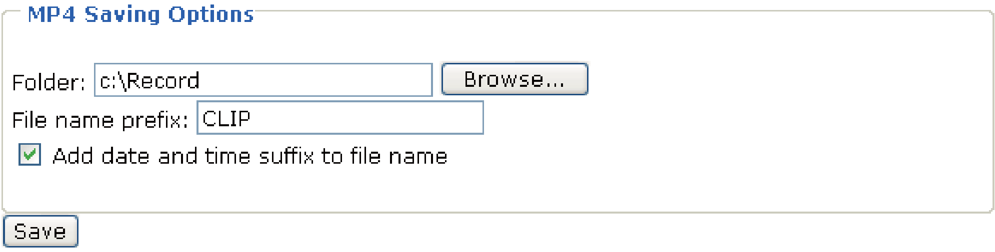
UDP unicast: This protocol allows for more real-time audio and video streams. However, network packets may be lost due to network burst traffic and images may be broken. Activate UDP connection when occasions require time-sensitive responses and the video quality is less important. Note that each unicast client connecting to the server takes up additional bandwidth and the Network Camera allows up to ten simultaneous accesses.

UDP multicast: This protocol allows multicast-enabled routers to forward network packets to all clients requesting streaming media. This helps to reduce the network transmission load of the Network Camera while serving multiple clients at the same time. Note that to utilize this feature, the Network Camera must be configured to enable multicast streaming at the same time. For more information, please refer to RTSP Streaming on page 36.

TCP: This protocol guarantees the complete delivery of streaming data and thus provides better video quality. Nevertheless, the downside with this protocol is that its real-time effect is not as good as that of the UDP protocol.

HTTP: This protocol allows the same quality as TCP protocol and you don't need to open specific port for streaming under some network environments. Users inside a firewall can utilize this protocol to allow streaming data to come through.

## MP4 Saving Options

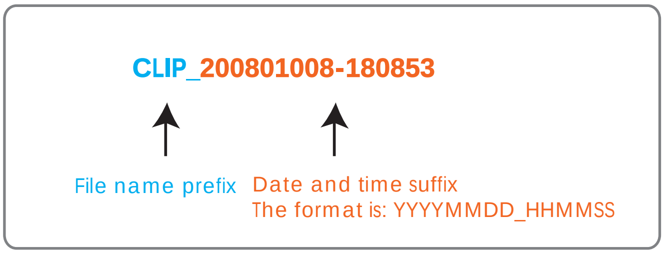



Users can record the live video as they are watching it by clicking Start MP4 Recording on the main page. Here, you can specify the storage destination and file name.

Folder: Specify a storage destination for the recorded video files.

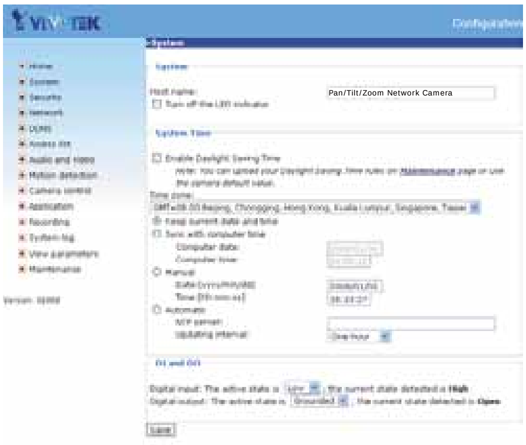
File Name Prefix: Enter the text that will be put in front of the video file name.

Add date and time suffix to the file name: Select this option to add date and time to the file name suffix.



# Configuration

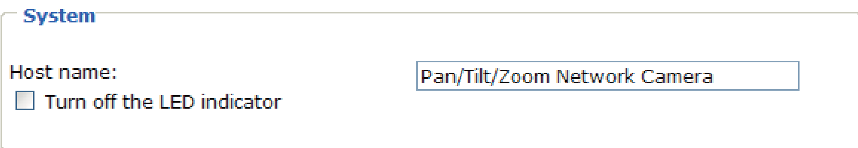
Only Administrators can access the system configuration page. Each category in the left menu will be explained in the following sections.



## System

This section explains how to configure the basic settings for the Network Camera, such as the host name and system time. It is composed of the following three columns: System, System Time and DI and DO. When completed with the settings on this page, click Save on the page bottom to take effect.

### System




<u>Host name</u>: Set a desired name for the Network Camera. The text will be displayed at the top of the main page.

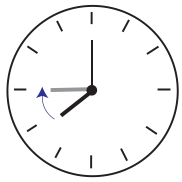
<u>Turn off the LED indicator</u>: If you don't want to let others know that the network camera is on, you can select this option to turn off the LED illuminators. This will prevent the Network Camera's operation from being noticed.

### System Time



Enable Daylight Saving Time: Select this option to enable daylight saving time (DST). During DST, the system clock moves one hour ahead. Note that to utilize this feature, please set the time zone for your Network Camera first. Then, the starting time and ending time of the DST is displayed upon selecting this option. To manually configure the daylight saving time rules, please refer to Upload / Export Daylight Saving Time Configuration File on page 65 for details.



Time zone: According to your local time zone, select one from the drop-down list.

Keep current date and time: Select this option to reserve the current date and time of the Network Camera. The Network Camera's internal real-time clock maintains the date and time even when the power of the system is turned off.

Sync with computer time: Select this option to synchronize the date and time of the Network Camera with the local computer. The read-only date and time of the PC is displayed as updated.

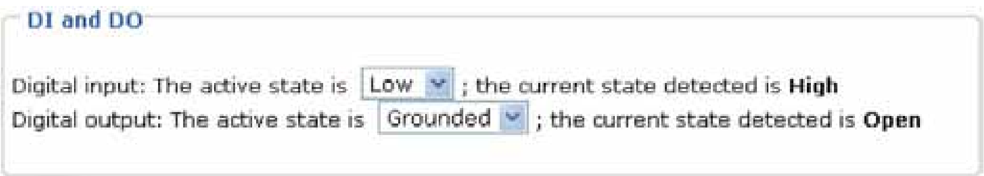
Manual: The administrator can enter the date and time manually. Note that the date and time format are [yyyy/mm/dd] and [hh:mm:ss].

Automatic: The Network Time Protocol is a protocol serves synchronize computer clocks by periodically querying an NTP Server.

NTP server: Assign the IP address or domain name of the time-server. Leaving the text box blank connects the Network Camera to the default time-servers.

Update interval: Select to update the time with the NTP server on hourly, daily, weekly, or monthly basis.

## DI and DO



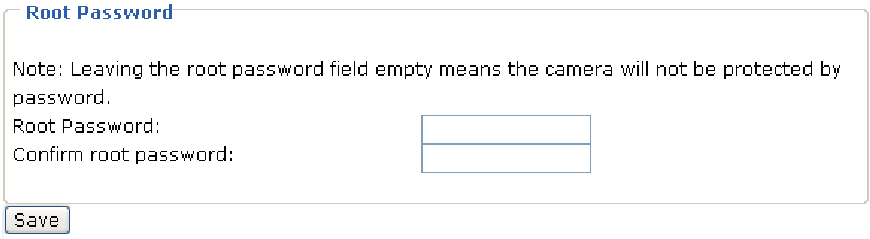

Digital input: Select High or Low to define normal status of the digital input. The Network Camera will report the current status.

Digital output: Select Grounded or Open to define normal status of the digital output. The Network Camera will show whether the trigger is activated or not.

# Security

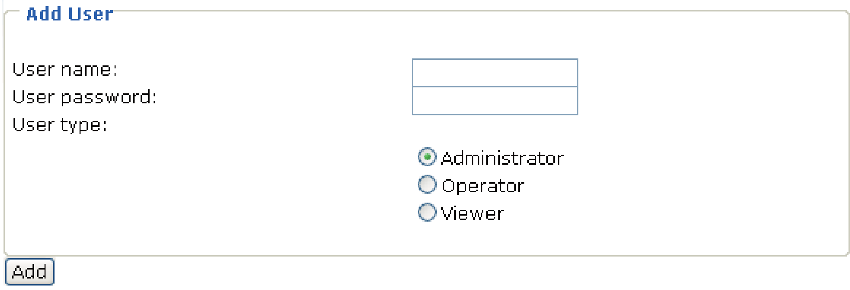
This section explains how to enable password protection and create multiple accounts. It is composed of the following three columns: Root Password, Add User and Manage User.

## Root Password




The administrator account “root” is permanent and can not be deleted. Please note that if you want to add more accounts, you must apply a password for the “root” account first.
1. Type the password identically in both text boxes.
2. Click Save to enable password protection.
3. A window will be prompted for authentication; type the correct user’s name and password in related fields to access the Network Camera.

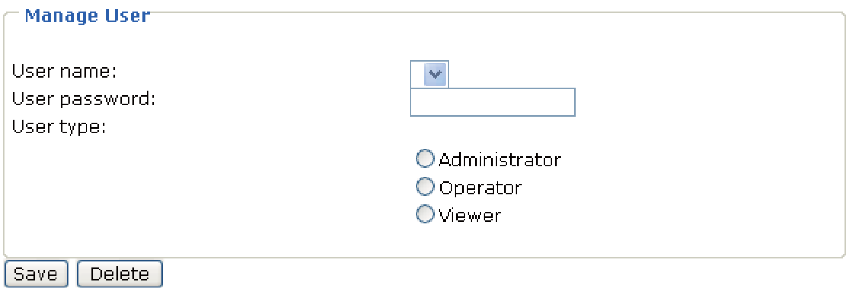
## Add User




Administrators can add up to twenty user accounts.
1. Input the new user’s name and password.
2. Select the desired security level. Click Add to take effect.

Access rights are sorted by user types. There are three kinds of user types. Only administrators can access the Configuration page. Operators and viewers can not access the configuration page. Though operators can not access the page, they are capable of using the url commands to get and set the value of parameters. For more information, please refer to URL Commands of the Network Camera on page 68. Viewers can only access the main page.

## Manage User



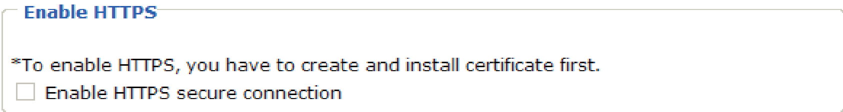

Here you can change user’s access rights or delete user accounts.
1. Pull down the user list to find an account.
2. Make necessary changes and then click Save or Delete to take effect.

## HTTPS

This section explains how to enable authentication and encrypted communication over SSL.

### Enable HTTPS

Select this option to turn on the HTTPS communication.

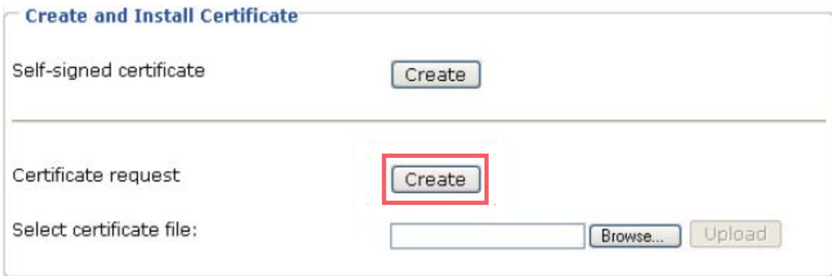



### Create and Install Certificate

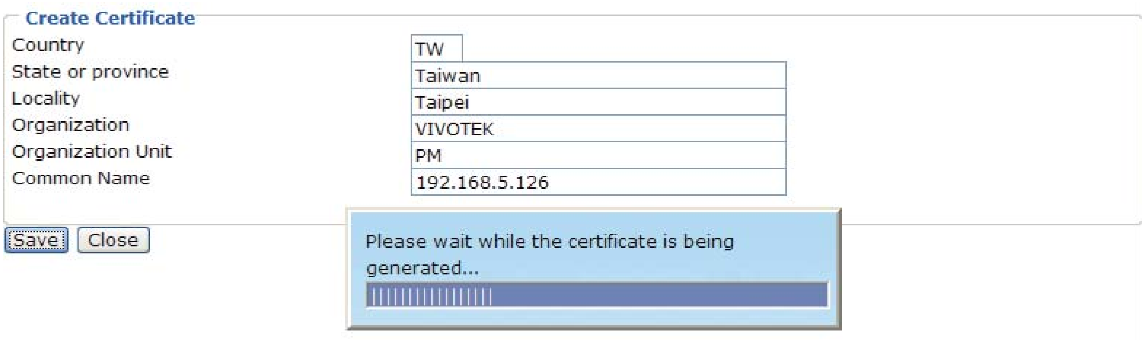
Select either to create a self-signed certificate or a signed certificate.

**To create a certificate from a certificate authority**

1. Click Create for Certificate request. The Create Certificate window will pop up.




2. Fill in the information required for generating a Certificate Signing Request (CSR) and click Save.




3. Here is an example of a CSR:

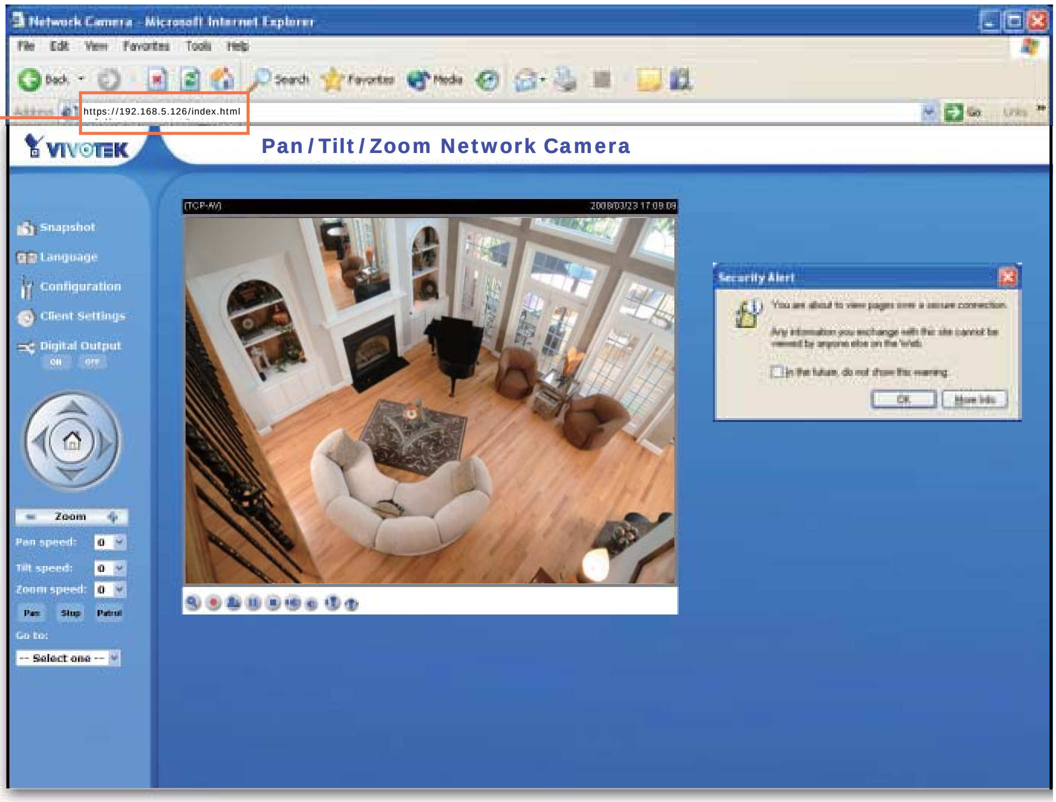


4. Look for a trusted certificate authority that issues digital certificates. Enroll the Network Camera. Wait for the certificate authority to issue a SSL certificate; then upload the issued certificate to the Network Camera.




5. Browsing the Network Camera using HTTPS helps to protect streaming data over the Internet.

https://xxx.xxx.x.xxx

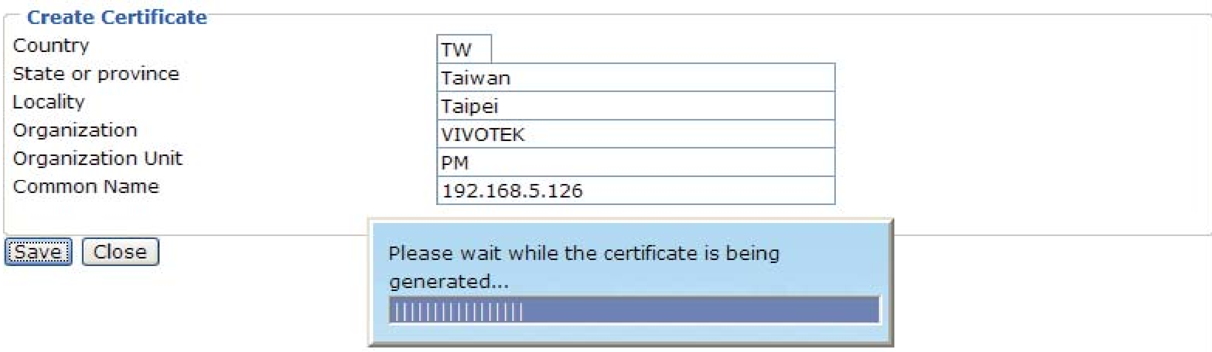



## To create a self-signed certificate

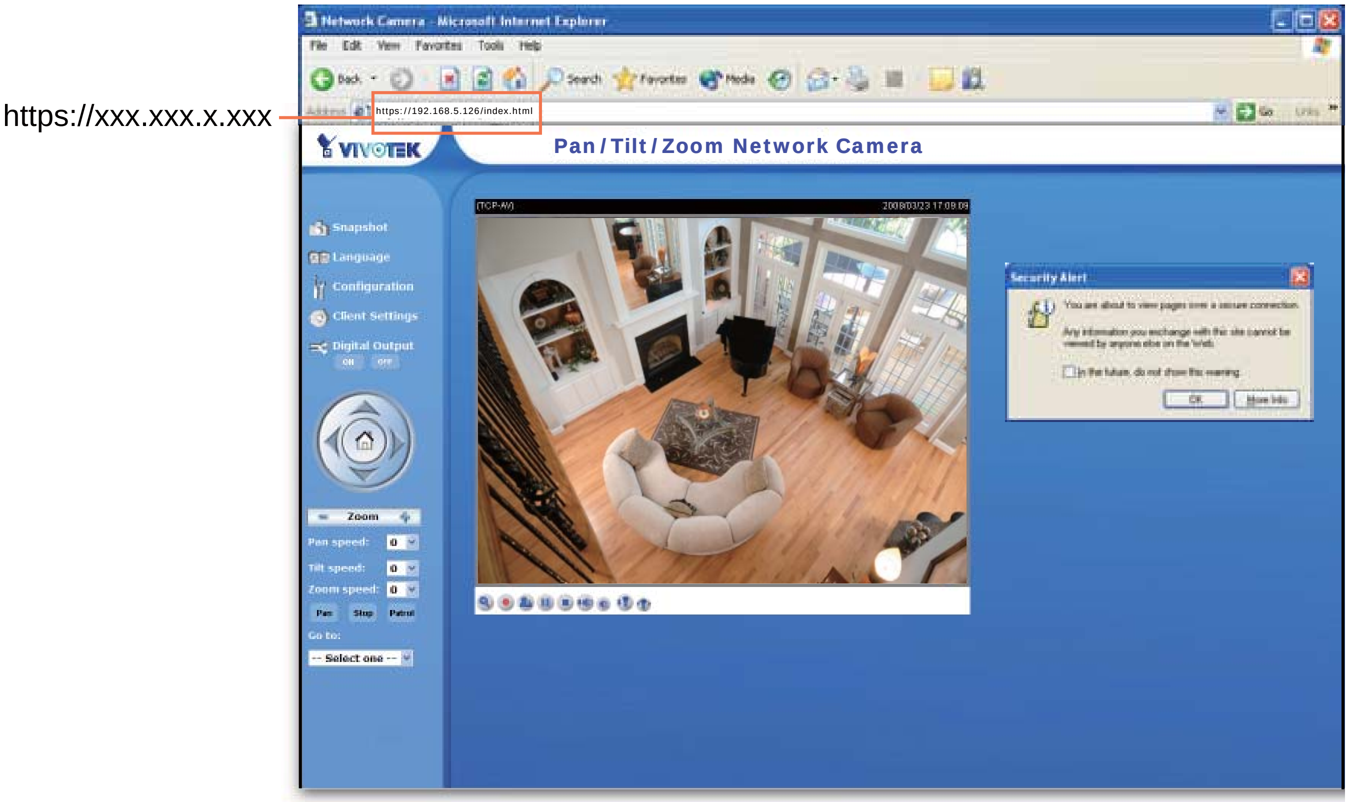
1. Click Create for Create and Install Certificate. This pops up the Create Certificate window.



2. Fill in the information required for generating a Certificate Signing Request (CSR) and click Save.

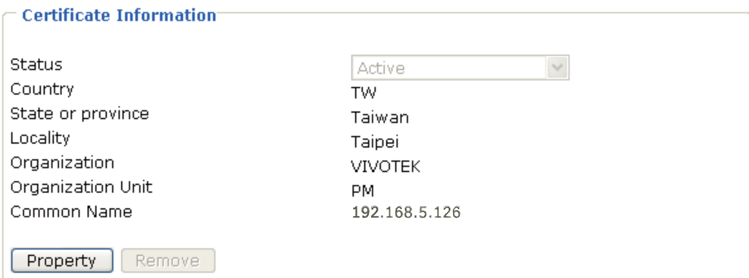



3. Browsing the Network Camera using HTTPS helps to protect streaming data over the Internet.




## Certificate Information

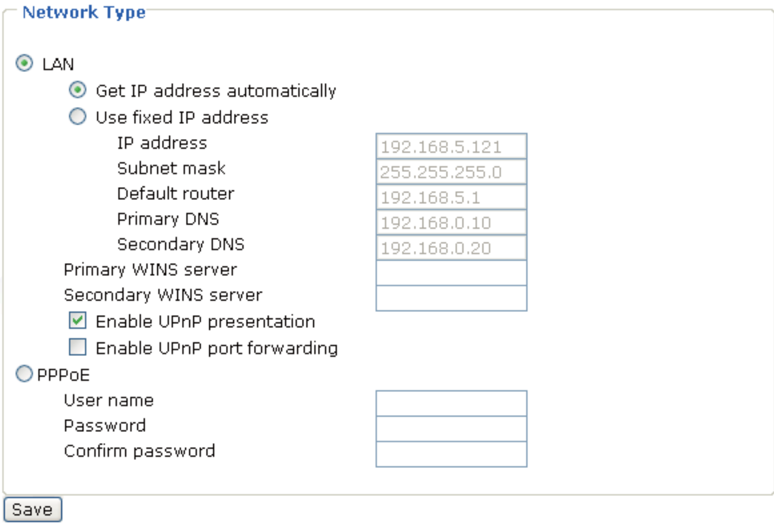
Here display the certification information. Users may click Property for details. To remove the signed certificated, uncheck the Enable HTTPS secure connection and click Remove.



# Network

This section explains how to configure wired network connection for the Network Camera. It is composed of the following five columns: Network Type, HTTP, Two way audio, FTP and RTSP Streaming. When completed with the settings on this page, click Save to take effect.

## Network Type



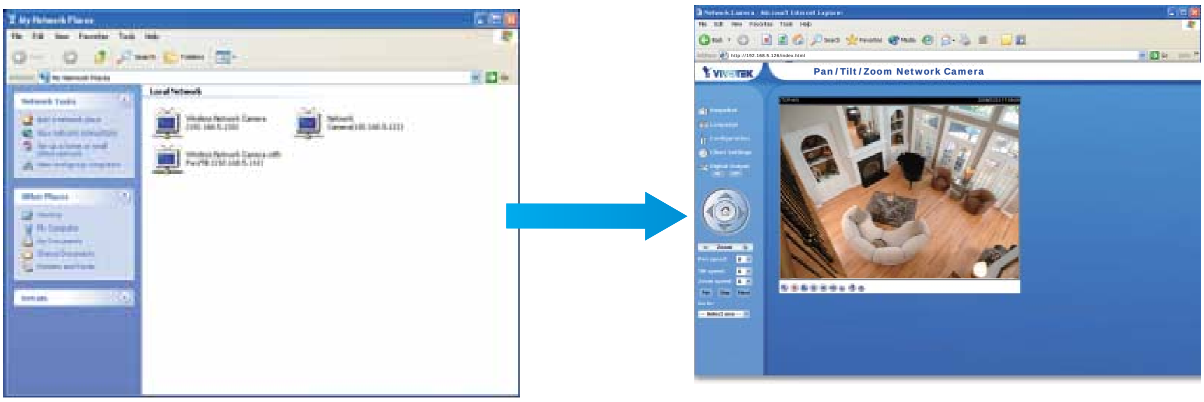

### LAN

Select this option when the Network Camera is deployed in a local area network (LAN) and is intended to be accessed by local computers.

Get IP address automatically: Select this option to obtain an available dynamic IP address assigned by a DHCP server each time the camera is connected to the LAN.

Use fixed IP address: Select this option to manually assign a static IP address to the Network Camera. Please refer to Internet connection with static IP on page 9 for details.

Enable UPnP presentation: Select this option to enable UPnP™ presentation for your Network Camera so that whenever a Network Camera is presented to the LAN, shortcuts of connected Network Cameras will be listed in My Network Places. Currently, UPnP™ is supported by Windows XP or later. Note that to utilize this feature, please make sure the UPnP™ component is installed on your computer.




Enable UPnP port forwarding: To access the Network Camera from the Internet, select this option to allow the Network Camera to open ports on the router automatically so that video streams can be sent out from a LAN. To utilize of this feature, make sure that your router supports UPnPTM and it is activated.

## PPPoE (Point-to-point over Ethernet)

Select this option to configure your Network Camera to make it accessible from anywhere as long as there is an Internet connection. Note that to utilize this feature, it requires an account provided by your ISP.

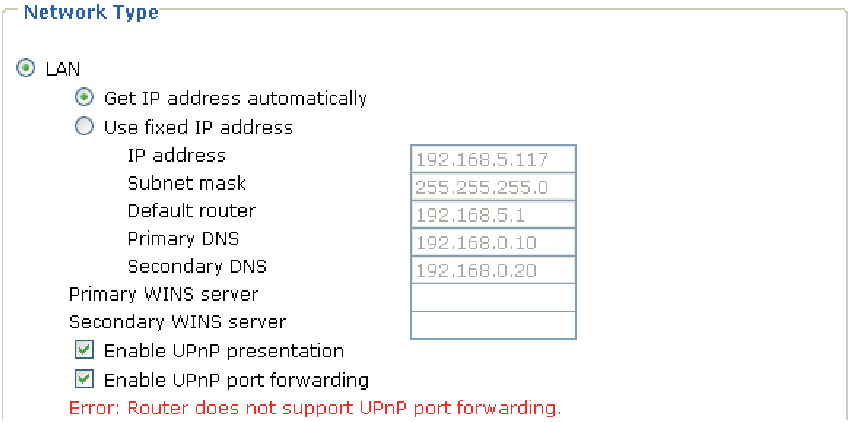
Follow the steps below to acquire your Network Camera's public IP address.

1. Set up the Network Camera in a LAN.
2. Go to Configuration > Application > Server Settings (please refer to Server Settings on page 55) to add a new server -- email or FTP server.
3. Go to Configuration > Application > Media Settings (please refer to Media Settings on page 53). Select System log so that you will receive a list of system log in TXT file format which contains the Network Camera's public IP address in your email or on the FTP server.
4. Go to Configuration > Network > Network Type. Select PPPoE and enter the user name and password provided by your ISP. Click Save to take effect.
5. The Network Camera starts to reboot.
6. Disconnect the power source of the Network Camera; remove it from the LAN environment to the Internet.

***NOTE***

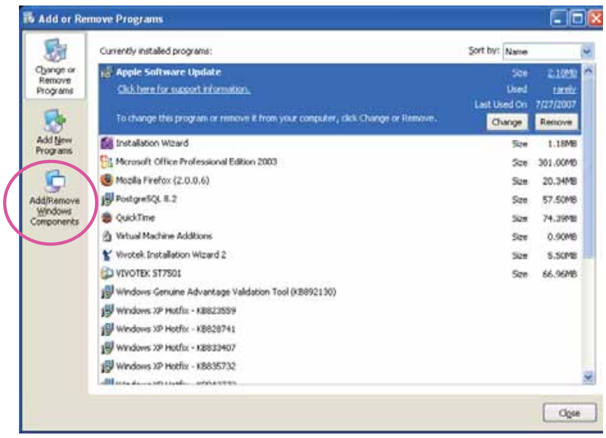
► *If the default ports are already used by other device connecting to the same router, the Network Camera will select other ports for the Network Camera.*

► *If UPnP™ is not supported by your router, you will see the following message.*

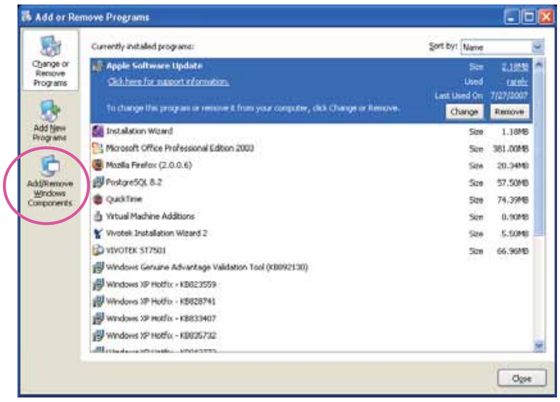



► *Steps to enable UPnP™ user interface on your computer:*
*Note that you must log on to the computer as a system administrator to install the UPnP™ components.*

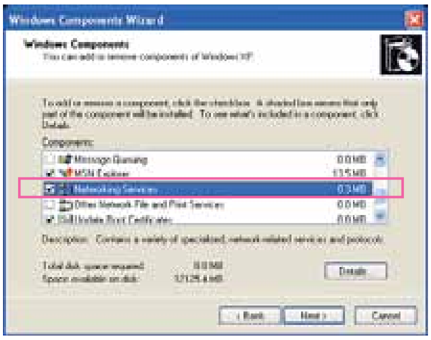
*1. Go to Start, click Control Panel, and then click Add or Remove Programs.*



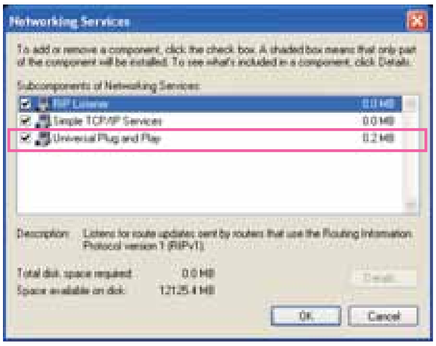
2. In the Add or Remove Programs dialog box, click Add/Remove Windows Components.



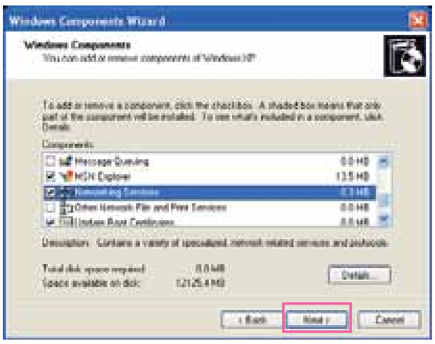

3. In the Windows Components Wizard dialog box, select Networking Services and then click Details.




4. In the Networking Services dialog box, select Universal Plug and Play and then click OK.




5. Click Next in the following window.




6. Click Finish. UPnP™ is enabled.

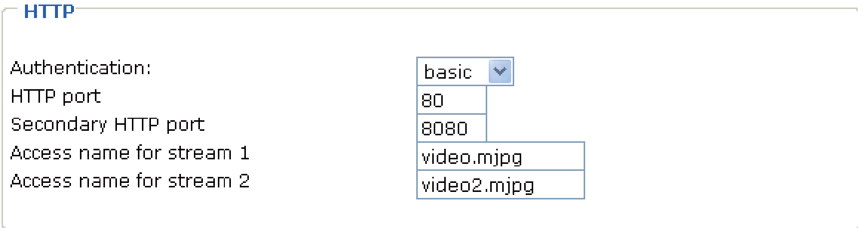
► How does UPnP™ work?
UPnP™ networking technology provides automatic IP configuration and dynamic discovery of devices added to a network. Services and capabilities offered by networked devices, such as printing and file sharing, are available among each other without bothersome network configuration. In the case of Network Cameras, you will see Network Camera shortcuts at My Network Places.

► *Enabling UPnP port forwarding allows the Network Camera to open secondary HTTP port on the router, not HTTP port, meaning that you have to add the secondary HTTP port number behind the Network Camera's public address in order to access the Network Camera from the Internet. For example, when the HTTP port is set to 80 and the secondary HTTP port is set to 8080, refer to the list below for the Network Camera's IP address.*

| From the Internet | In a LAN |
|---|---|
| http://203.67.124.123:8080 | http://192.168.4.160 or<br>http://192.168.4.160:8080 |

► *If the PPPoE settings are incorrectly configured or the Internet access is not working, restore the Network Camera to factory default; please refer to Restore on page 59 for details. After the Network Camera is reset to factory default, it is accessible in a LAN.*

## HTTP




Authentication: Depending on your network security requirements, the Network Camera provides two types of security settings for a HTTP transaction: basic and digest. If basic authentication is selected, the password is sent in plain text format; there can be potential risks of being intercepted. If digest authentication is selected, user credentials are encrypted in MD5 algorithm and thus provide better protection against unauthorized accesses.

HTTP port / Secondary HTTP port: By default, the HTTP port is set to 80 and the secondary HTTP port is set to 8080. Also, they can be assigned with another port number between 1025 and 65535. If the ports are incorrectly assigned, the following warning messages are displayed:





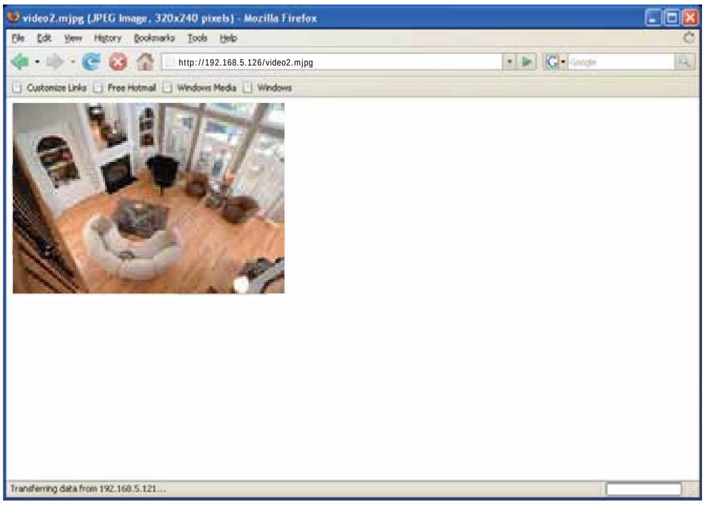


To access the Network Camera within a LAN, both HTTP port and secondary HTTP port can be used to access the Network Camera. For example, when the HTTP port is set to 80 and the secondary HTTP port is set to 8080, refer to the list below for the Network Camera's IP address.

| In a LAN |
|---|
| http://192.168.4.160 or<br>http://192.168.4.160:8080 |

Access name for stream 1 / Access name for stream 2: The access name is used to differentiate the streaming source. When using Mozilla Firefox or Netscape to access the Network Camera, and the video mode is set to JPEG, users will receive continuous JPEG pictures. This technology, known as "server push", allows the Network Camera to feed live pictures to Mozilla Firefox and Netscape.
Use http://<ip address>:<http port>/<access name for stream1 or stream2> to make connection.

For example, when the access name for stream 1 is set to video.mjpg:
1. Launch Mozilla Firefox or Netscape.
2. Type the URL command in the address field. Press Enter.
3. The JPEG images will be displayed in your web browser.

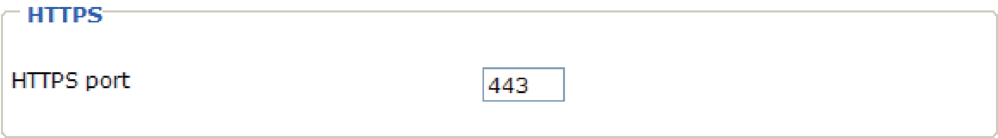



***NOTE***

► *To utilize the HTTP authentication, make sure that your have set a password for the Network Camera first; please refer to Security on page 26 for details.*

► *Microsoft® Internet Explorer does not support server push technology; therefore, using http://<ip address>:<http port>/<access name for stream1 or stream2> will fail to access the Network Camera.*

## HTTPS




By default, the HTTPS port is set to 443. Also, it can be assigned with another port number between 1025 and 65535.

## Two way audio

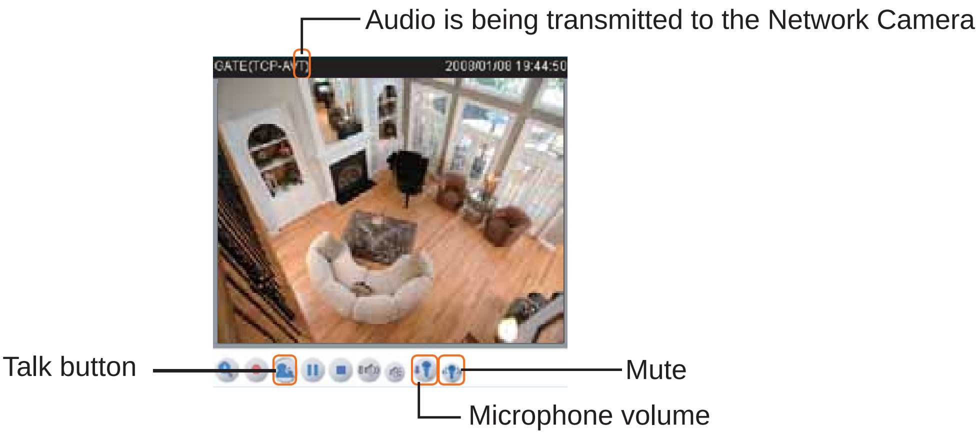



By default, the two way audio port is set to 5060. Also, it can be assigned with another port number between 1025 and 65535.

The Network Camera supports two way audio communication so that operators can transmit and receive audio simultaneously. By using the Network Camera's built-in microphone and an external speaker, you can communicate with people around the Network Camera.

Note that as JPEG only transmits a series of JPEG images to the client, to utilize this feature, make sure the video mode is set to "MPEG-4" and the media option is set to "Video and Audio".



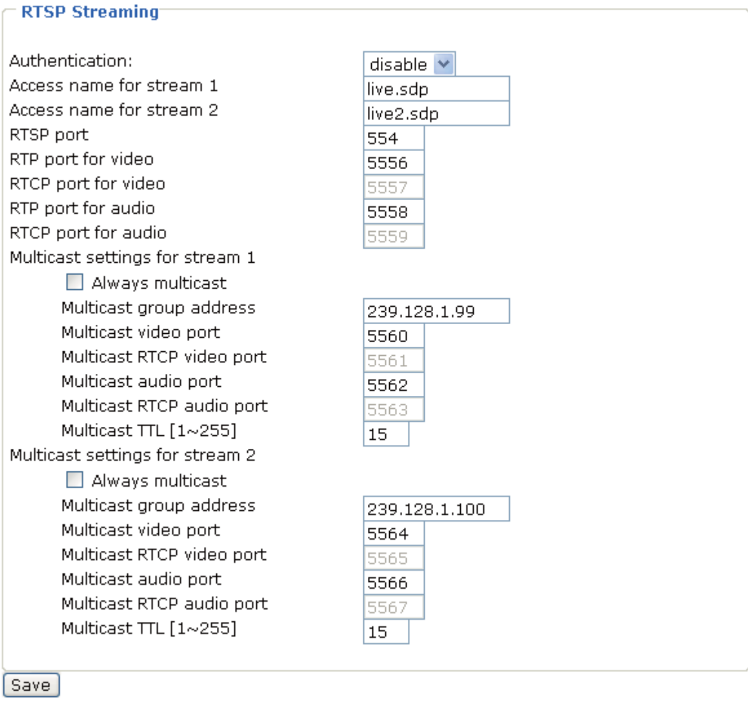

Click to enable audio transmission to the Network Camera; click to adjust the volume of microphone; click to turn off the audio. To stop talking, click again.

## FTP




The FTP server allows the Network Camera to utilize VIVOTEK Installation Wizard 2 to upgrade firmware. By default, the FTP port is set to 21. Also, it can be assigned with another port number between 1025 and 65535.

## RTSP Streaming




Authentication: Depending on your network security requirements, the Network Camera provides three types of security settings for streaming via RTSP protocol: disable, basic and digest. If basic authentication is selected, the password is sent in plain text format; there can be potential risks of being intercepted. If digest authentication is selected, user credentials are encrypted in MD5 algorithm and thus provide better protection against unauthorized accesses.

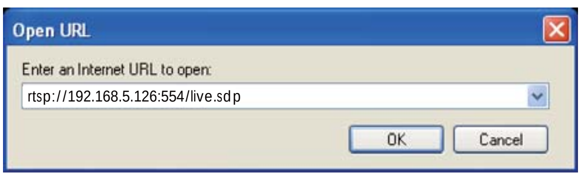
The accessibility of the RTSP streaming for the three authentication modes are listed in the following table:

| | Quick Time player | Real Player |
|---|---|---|
| Disable | O | O |
| Basic | O | O |
| Digest | O | X |

O indicates that the authentication mode is supported by the RTSP player.
X indicates that the authentication mode is NOT supported by the RTSP player.

Access name for stream 1 / Access name for stream 2: The access name is used to differentiate the streaming source. When using a RTSP player to access the Network Camera, and the video mode is set to MPEG-4, use the following RTSP URL command to request a transmission of streaming data.

rtsp://<ip address>:<rtsp port>/<access name for stream1 or stream2>
For example, when the access name for stream 1 is set to live.sdp:
1. Launch a RTSP player.
2. Choose File > Open URL. An URL dialog box will pop up.
3. Type the URL command in the text box.
   For example:



4. The live video will be displayed in your player.




RTSP port /RTP port for video, audio/ RTCP port for video, audio

The RTSP (Real-Time Streaming Protocol) controls the delivery of streaming media. By default, the port number is set to 554.

The RTP (Real-time Transport Protocol) is used to deliver video and audio data to the clients. By default, the RTP port for video is set to 5556 and the RTP port for audio is set to 5558.

The RTCP (Real-time Transport Control Protocol) allows the Network Camera to transmit the data by monitoring Internet traffic volume. By default, the RTCP port for video is set to 5557 and the RTCP port for audio is set to 5559.

The five ports can be changed between 1025 and 65535. The RTP port must be an even number and the RTCP port is RTP port number plus one, and thus always be odd. When the RTP port changes, the RTCP port will change accordingly.

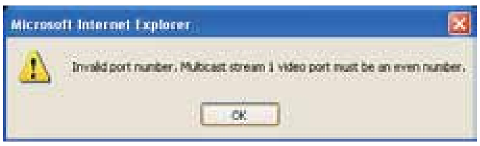
If the RTP ports are incorrectly assigned, the following warning message is displayed:




Multicast settings for stream 1 / Multicast settings for stream 2: Select the Always multicast to enable multicast for stream 1 or stream 2. Unicast video transmission delivers a stream through point-to-point transmission; multicast, on the other hand, sends a stream to the multicast group address and allows multiple clients to acquire the stream by requesting a copy from the Multicast group address.

The five ports can be changed between 1025 and 65535. The multicast RTP port must be an even number and the multicast RTCP port number is the multicast RTP port number plus one, and thus it is always be odd. When the multicast RTP port changes, the multicast RTCP port will change accordingly.

If the multicast RTP video ports are incorrectly assigned, the following warning message is displayed:

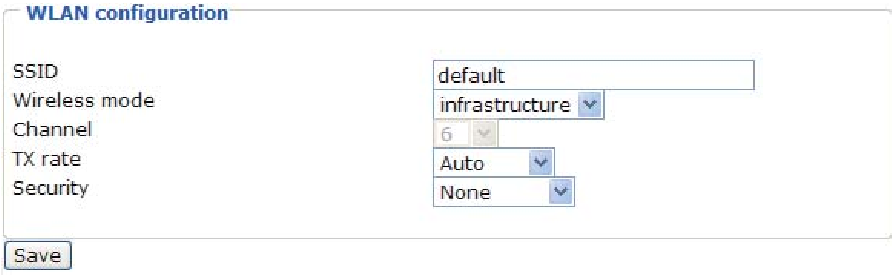



Multicast TTL [1~255]:The multicast TTL (Time to live) is the value that tells the router the range a packet can be forwarded.

***NOTE***

► *To utilize the RTSP streaming authentication, make sure that your have set a password for the Network Camera first; please refer to Security on page 26 for details.*

## Wireless LAN (PZ7152 only)

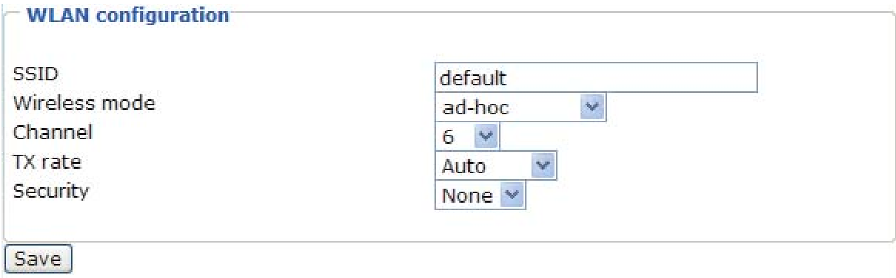



SSID (Service Set Identifier): It is a name that identifies a wireless network. Access Points and wireless clients attempting to connect to a specific WLAN (Wireless Local Area Network) must use the same SSID. The default setting is default. Note: The maximum length of SSID is 32 single-byte characters and SSID can’t be any of “, <, > and space character.

Wireless mode: Clicking on the pull-down menu to select from the following options:

Infrastructure: Make the Network Camera connect to the WLAN via an Access Point. (The default setting)

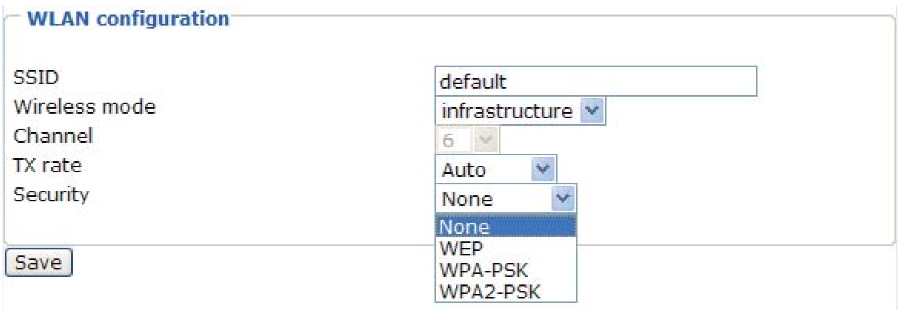
Ad-Hoc: Make the Network Camera connect directly to a host equipped with a wireless adapter in a peer-to-peer environment.




Channel: While in infrastructure mode, the channel is selected automatically to match the channel setting for the selected Access Point. In Ad-Hoc mode, the channel must be manually set to the same channel for each wireless adapter. The default channel setting depends on the installed region.

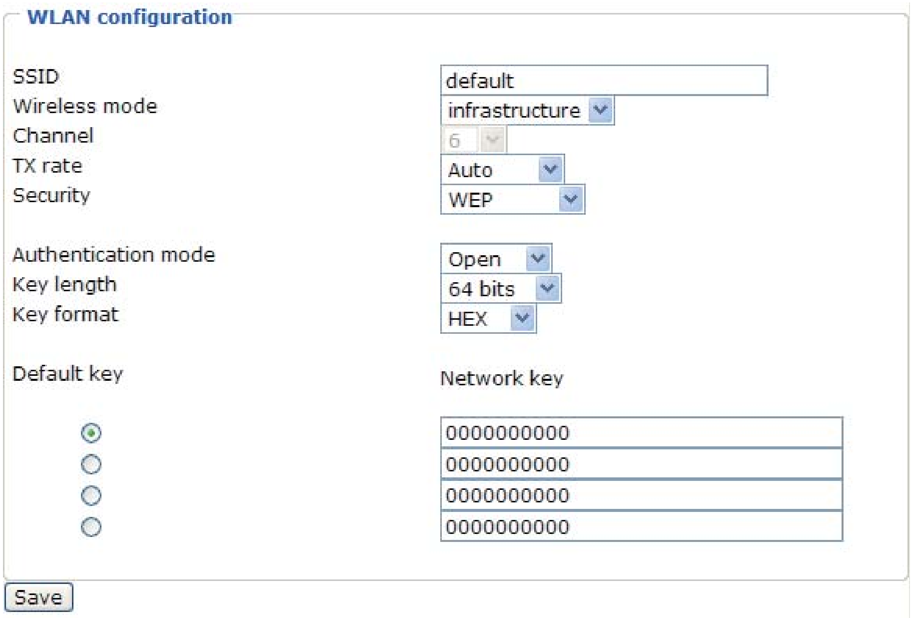
TX rate: This field is for selecting the maximum transmission rate on the network. The default setting is “auto”, that is the Network Camera will try to connect to the other wireless device with highest transmitting rate.

Security: Select the data encrypt method. There are four types including none, WEP, WPA-PSK, and WPA2-PSK.




1. None: No data encryption.

2. WEP: It allows communication only with other devices with identical WEP settings.




■ Authentication Mode: Choose one of the following modes. Open is the default setting.
Open – communicates the key across the network.
Shared – allows communication only with other devices with identical WEP settings.

■ Key length: The administrator can select the key length among 64 or 128 bits.
64 bits is the default setting.

■ Key format: Hexadecimal or ASCII. HEX is the default setting.
HEX digits consist of the numbers 0~9 and the letters A-F.
ASCII is a code for representing English letters as numbers from 0-127 except “, <, > and space characters that are reserved.

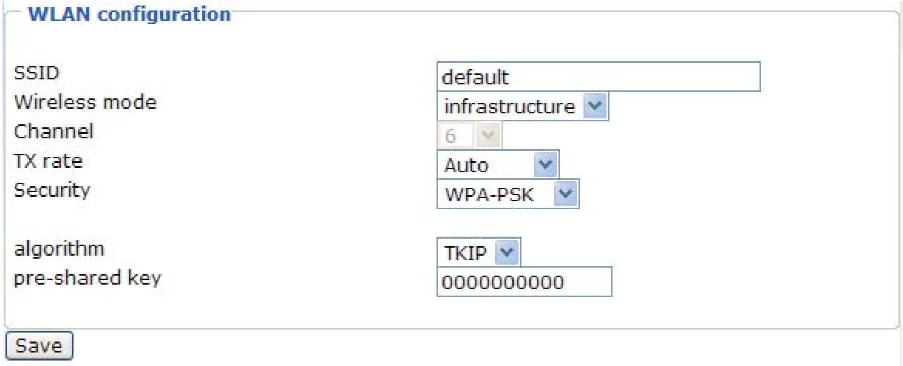
■ Network Key: Enter a key in either hexadecimal or ASCII format.
You can select different key length, and acceptable input length is listed as following:
64 bits key length: 10 Hex digits or 5 characters.
128 bites key length: 26 Hex digits or 13 characters.

***NOTE***

► *When 22(“), 3C(<) or 3E(>) are input in network key, the key format can’t be changed to ASCII format.*

3. WPA-PSK: Use WPA pre-shared key.

4. WPA2-PSK: Use WPA2 pre-shared key.




■ Algorithm: Choosing one of the following algorithm for WPA-PSK and WPA2-PSK modes.

TKIP (Temporal Key Integrity Protocol): A security protocol used in the IEEE 802.11 wireless networks. TKIP is a “wrapper” that goes around the existing WEP encryption. TKIP comprises the same encryption engine and RC4 algorithm defined for WEP. However, the key used for encryption in TKIP is 128 bits long. This solves the first problem of WEP: a too-short key length. (From Wikipedia)

AES (Advanced Encryption Standard): In cryptography, the Advanced Encryption Standard (AES), also known as Rijndael, is a block cipher adopted as an encryption standard by the U.S. government. It is expected to be used worldwide and analysed extensively, as was the case with its predecessor, the Data Encryption Standard (DES). AES was announced by National Institute of Standards and Technology (NIST) as U.S. FIPS PUB 197 (FIPS 197) in November 26, 2001 after a 5-year standardization process (see Advanced Encryption Standard process for more details). It became effective as a standard May 26, 2002. As of 2006, AES is one of the most popular algorithms used in symmetric key cryptography. (From Wikipedia)

■ Pre-shared Key: Entering a key in ASCII format. The length of the key is 8 ~ 63.

***NOTE***

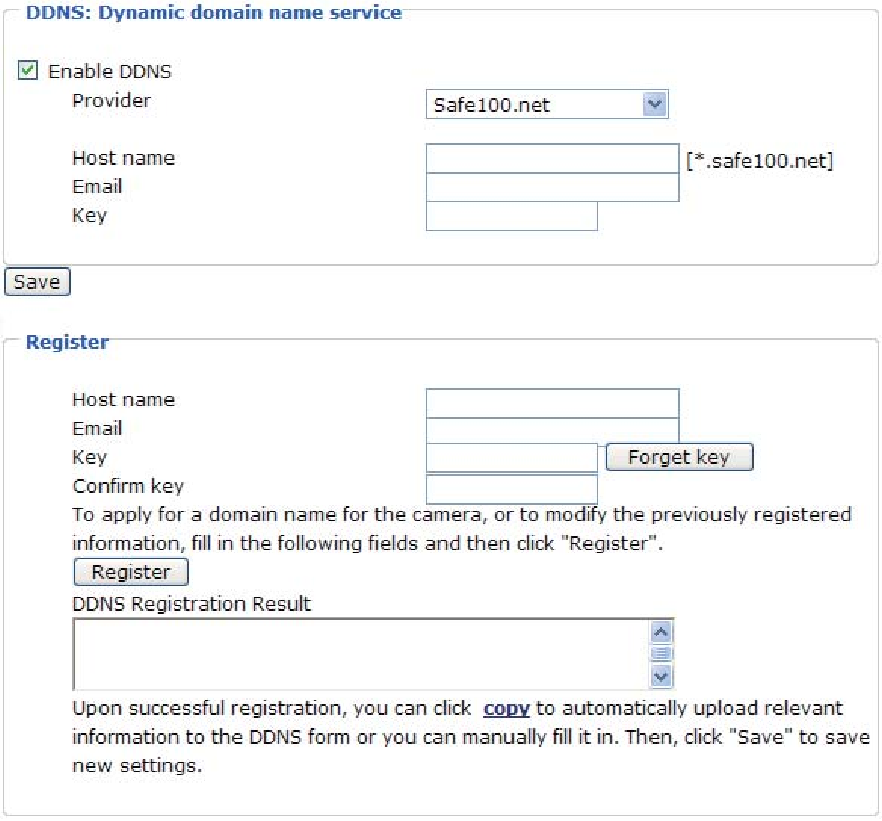
► *After wireless configurations are completed, click Save and the camera will reboot. Wait for the live image is reloaded to your browser. For VIVOTEK 7000-series cameras, you have to unplug the power cable and Ethernet cable from the camera; then re-plug the power cable to the camera. The camera will switch to wireless mode.*

► *Some invalid settings may cause the system failing to respond. Change the Configuration only if necessary and consult with your network supervisor or experienced users for correct settings. Once the system has lost contact, refer to Appendix A for reset and restore procedures.*

# DDNS

This section explains how to configure dynamic domain name service for the Network Camera. DDNS is a service that allows your Network Camera, especially when assigned with a dynamic IP address, to have a fixed host and domain name.

## DDNS: Dynamic domain name service



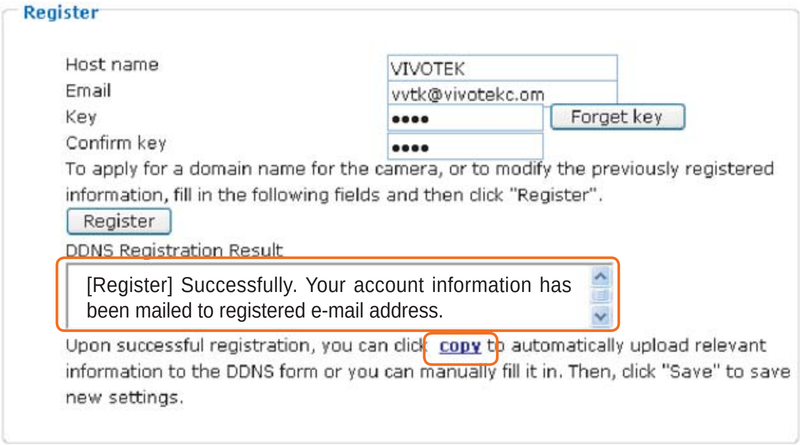

Enable DDNS: Select this option to enable the DDNS setting.

Provider: Select a DDNS provider of your choice from the Provider drop-down list.
VIVOTEK offers safe100, a free dynamic domain name service to VIVOTEK customers. It is recommended that you register with the safe100 to access the Network Camera from the Internet. Additionally, we offer other DDNS providers, such as Dyndns.org(Dynamic), Dyndns.org(Custom), TZO.com, DHS.org, CustomSafe100, dyn-interfree.it. Note that to utilize this feature, please apply a dynamic domain account first.

■ Safe100.net

1. In the DDNS column, select Safe100 from the Provider drop-down list. Click Agree when you agree with the terms of the Service Agreement.
2. In the Register column, fill in the Host name, Email, Key and Confirm Key and then click Register. After a host name has been successfully created, you will see a successful message in the DDNS Registration Result column, indicating that you have successfully applied a domain name on Safe100.net.

3. Click Copy and all the registered information will be uploaded to the corresponding fields in the DDNS column.




4. Select Enable DDNS and then click Save to take effect.

■ CustomSafe100

VIVOTEK offers documents to establish CustomSafe100 DDNS server for distributors and system integrators. You can use CustomSafe100 to register a dynamic domain name if your distributor or system integrators offer such services.

1. In the DDNS column, select CustomSafe100 from the Provider drop-down list.
2. In the Register column, fill in the Host name, Email, Key and Confirm Key; then click Register. After a host name has been successfully created, you will see a successful message in the DDNS Registration Result column, indicating that you have successfully registered a domain name on CustomSafe100.
3. Click Copy and all the registered information will be uploaded to the corresponding fields in the DDNS column.
4. Select Enable DDNS and then click Save to take effect.

Forget key: Click this button if you forget the key of Safe100 or CustomSafe100. Your account information will be sent to your email address.

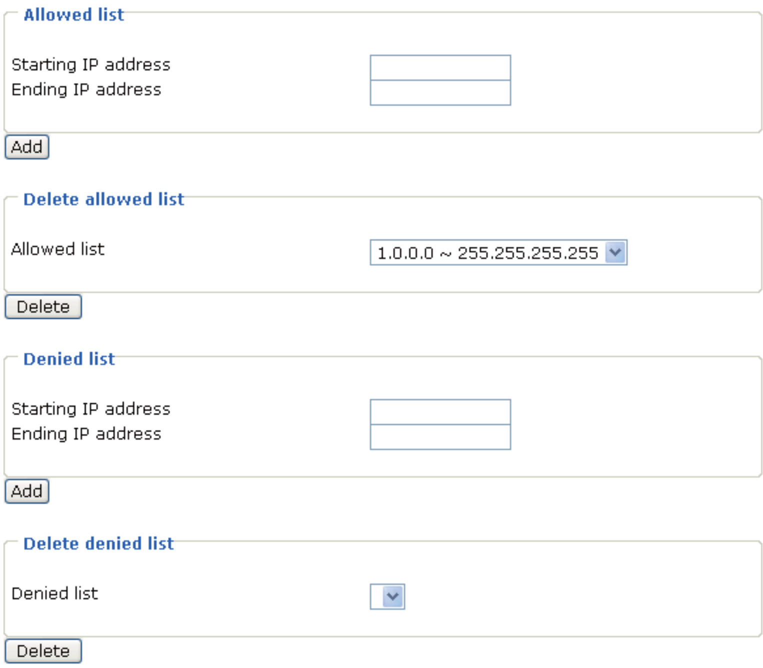
Refer to the following links to apply a dynamic domain account when selecting other DDNS providers:

■ Dyndns.org(Dynamic) / Dyndns.org(Custom): visit http://www.dyndns.com/
■ TZO.com: visit http://www.tzo.com/
■ DHS.org: visit http://www.dhs.org/
■ dyn-interfree.it: visit http://dyn-interfree.it/

# Access list

This section explains how to control the access permission by checking the client PC's IP addresses. It is composed of the following four columns: Allowed list, Denied list, Delete allowed list, and Delete denied list.

## Allowed list / Denied list

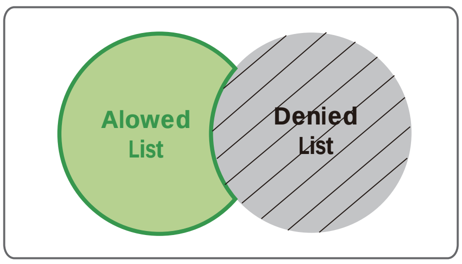



There are two lists for permission control: Allowed list and Denied list. Only those clients whose IP addresses are in the Allowed list and not in the Denied list can access the Network Camera.

1. In the Allowed list or Denied list column, type the starting IP address and ending IP address in the text boxes. A total of ten lists can be configured for both columns.
2. Click Add to take effect.

***NOTE***

► *For example, when the range of allowed list is set from 1.1.1.0 to 192.255.255.255 and the range of denied list is set from 1.1.1.0 to 170.255.255.255, Only users' IP located between 171.0.0.0 and 192.255.255.255 can access the Network Camera.*



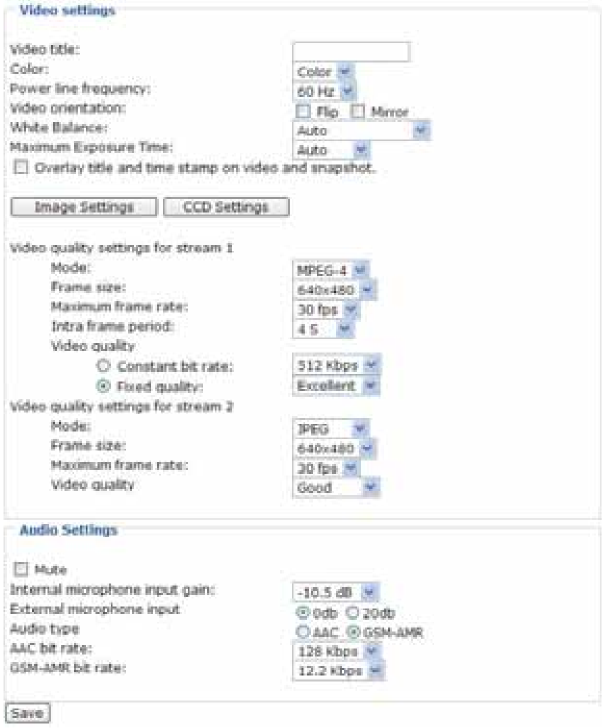

## Delete allowed list / Delete denied list

1. In the Delete allowed list or Delete denied list, select a list from the drop-down list.
2. Click Delete to take effect.

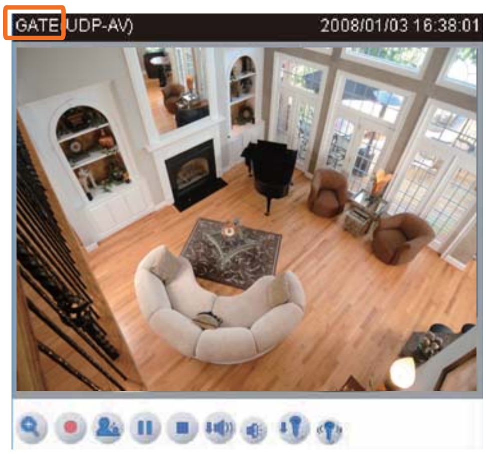
# Audio and video

This section explains how to cofigure audio and video performances of the Network Camera. It is composed of the following two columns: Video settings and Audio settings.

## Video settings




Video title: Enter a name that will be displayed on the title bar of the live video.




Color: Select to display colorful or black/white video streams.

Power line frequency: Set the power line frequency in consistent with local utility settings to eliminate uncomfortable image flickering associated with fluorescent lights. Note that after the power line frequency is changed, it is required to disconnect and reconnect the power cord of the Network Camera in order for the new setting to take effect.

Video orientation: Flip--vertically reflect the display of the live video; Mirror--horizontally reflect the display of the live video. Select both options if the Network Camera is installed upside-down (ex. on the ceiling) to correct the image orientation.

White balance: Adjust the value for best color temperature.

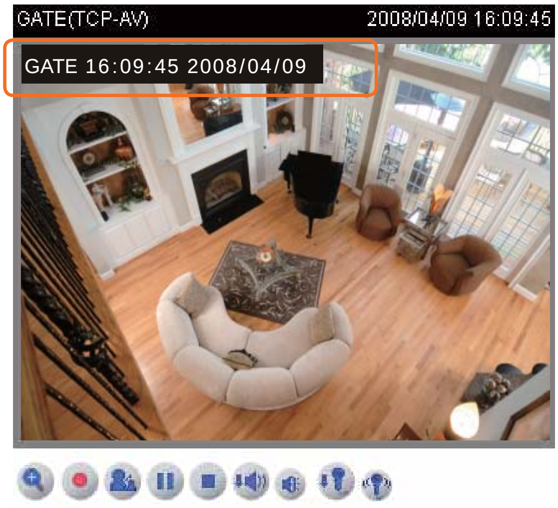
■ Auto

The Network Camera automatically adjusts the color temperature of light in response to different light sources. The white balance setting defaults to Auto and works well in most situations.

■ Fixed indoor
■ Fixed fluorescent
■ Fixed outdoor

Maximum Exposure Time: 1/120 S, 1/60 S, 1/30 S, 1/15 S, and Auto.

Overlay title and time stamp on video: Select this option to place the video title and time on video streams.
Note that when the frame size is set to 176 x 144 as the right picture below, only time will be stamped on video streams.



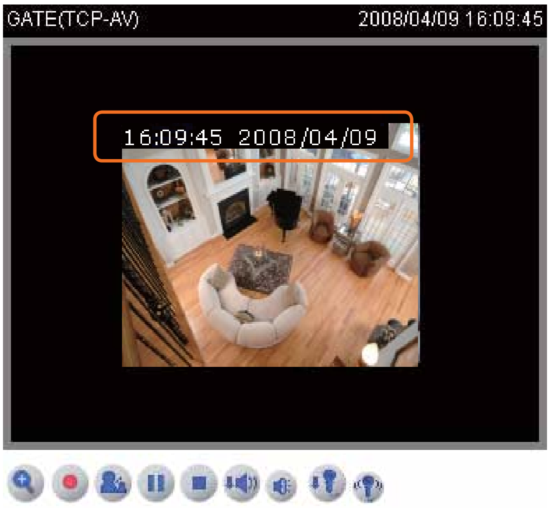
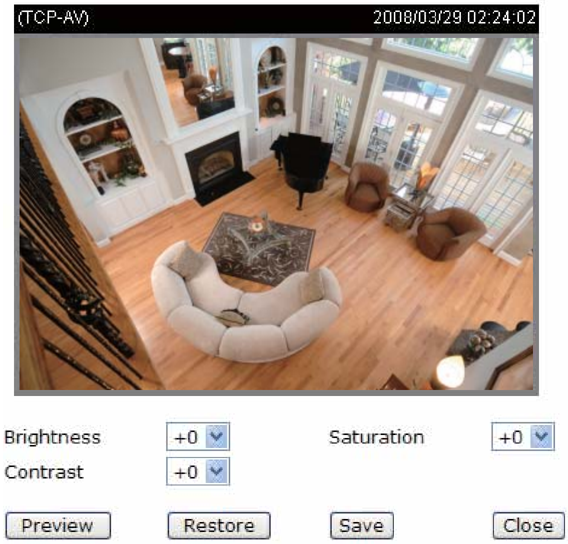



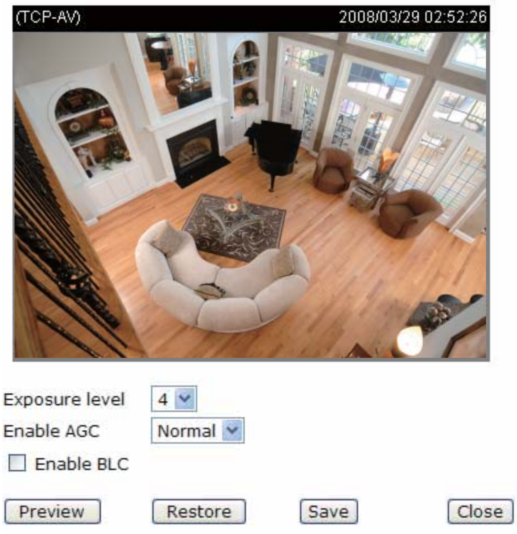

Image Settings
Click Image settings to open the Image Settings page. In this page, you can tune brighness, contrast, and saturation for video compensation. Each field has eleven levels ranged from -7 to +7. The value 0 indicates default auto tuning. The user may press "Preview" to fine-tune the image.

When the image is O.K ; press Save to set the image settings.
Click Restore to recall the original settings without incorporating the changes.



CCD Settings
Click CCD settings to open the CCD Settings page. In this page, you can set the exposure level, enable AGC, and enable BLC functions.

When completed with the settings on this page, Click Preview to view the image you set.
Click Restore to recall the original settings without incorporating the changes. Click Save to take effect. Click Close to quit this page.




■ Exposure level
You can manually set up the Exposure level, which ranges from 1 to 8. The default value is 4.

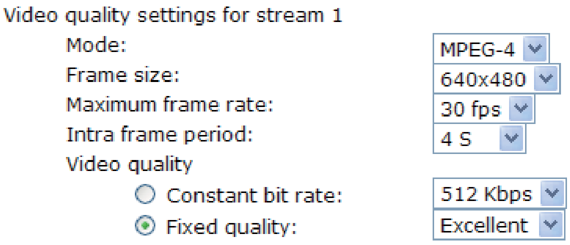
■ Enable AGC (Auto Gain Control)
Enable it to do MAX AGC or NORMAL AGC.

■ Enable BLC (Back Light Compensation)
Enable it when the object is too dark or too bright to recognize. It allows the camera to adjust to the best light conditions in any environment and automatically give the necessary light compensation.

Video quality settings for stream 1 / stream 2: Set two streams for the Network Camera for different viewing devices. For example, set the Network Camera to a smaller frame size and a lower bit rate for viewing on mobile phones. Or, set the Network Camera to a larger video size and a higher bit rate for viewing on web browsers.

■ Mode
The Network Camera offers two choices of video compression standards for real-time viewing: MPEG-4 and MJPEG.

If MPEG-4 is selected, it is streamed in RTSP protocol. There are four dependent parameters provided in MPEG-4 mode for video performance adjustment.




■ Frame size
Select the video size. Note that a larger frame size takes up more bandwidth. The frame sizes are selectable in the following resolutions: 176 x 144, 320 x 240 and 640 x 480.

■ Maximum frame rate
This limits the maximal refresh frame rate per second. Set the frame rate higher for a smoother video quality.

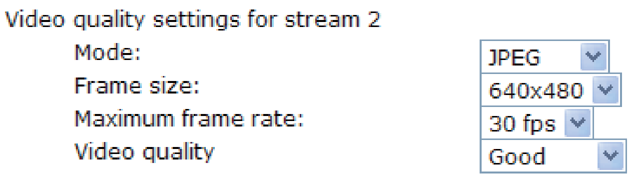
If the power line frequency is set to 50Hz, the frame rates are selectable at the following rates: 1fps, 2fps, 3fps, 5fps, 8fps, 10fps, 15fps, 20fps and 25fps. If the power line frequency is set to 60Hz, the frame rates are selectable at the following rates: 1fps, 2fps, 3fps, 5fps, 8fps, 10fps, 15fps, 20fps, 25fps and 30fps.

■ Intra frame period
Determine how often to plant an I frame. The shorter the duration, the more likely you will get a better video quality, but at the cost of higher network bandwidth consumption. Select the intra frame period from the following duration: 1/4 second, 1/2 second, 1 second, 2 seconds, 3 seconds and 4 seconds.

■ Video quality
A complex scene generally produces larger file size, meaning that higher bandwidth will be needed for data transmission. Therefore, if Constant bit rate is selected, the bandwidth utilization is fixed at a selected level, resulting in mutable video quality performances. The bit rates are selectable at the following rates: 20Kbps, 30Kbps, 40Kbps, 50Kbps, 64Kbps, 128Kbps, 256Kbps, 512Kbps, 768Kbps, 1Mbps, 2Mbps, 3Mbps and 4Mbps.

On the other hand, if Fixed quality is selected, all frames are transmitted with the same quality; bandwidth utilization is therefore unpredictable. The video qualities are selectable at the following settings: Medium, Standard, Good, Detailed and Excellent.

If JPEG mode is selected, the Network Camera continuously sends JPEG images to the clients, producing dynamic effects similar to movies. Every single JPEG image transmitted guarantees the same image quality, which in turn comes at the expense of variable bandwidth usage. And because the media contents are a combination of JPEG images, no audio data is transmitted to the clients.



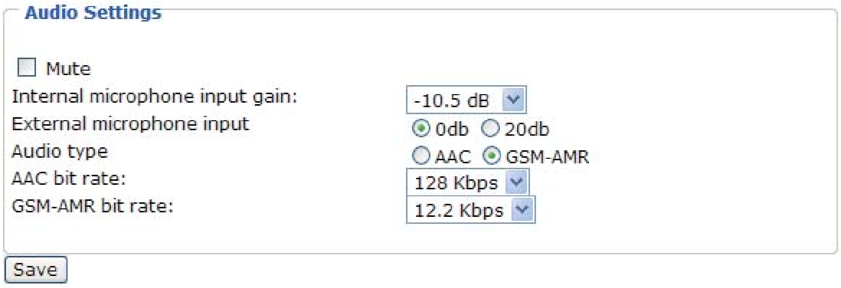

■ Frame size
Select the video size. Note that a larger frame size takes up more bandwidth. The frame sizes are selectable in the following resolutions: 176 x 144, 320 x 240 and 640 x 480.

■ Maximum frame rate
This limits the maximal refresh frame rate per second. Set the frame rate higher for a smoother video quality.

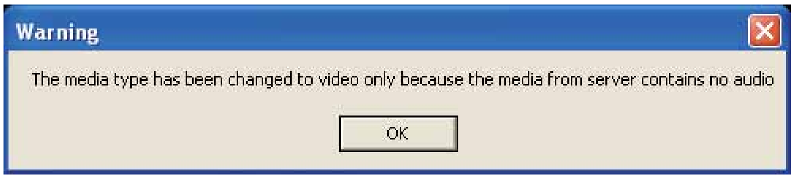
If the power line frequency is set to 50Hz, the frame rates are selectable at the following rates: 1fps, 2fps, 3fps, 5fps, 8fps, 10fps, 15fps, 20fps and 25fps. If the power line frequency is set to 60Hz, the frame rates are selectable at the following rates: 1fps, 2fps, 3fps, 5fps, 8fps, 10fps, 15fps, 20fps, 25fps and 30fps.

■ Video quality
The video qualities are selectable at the following settings: Medium, Standard, Good, Detailed and Excellent.

## Audio settings




Mute: Select this option to disable audio transmission from the Network Camera to all clients. Note that if mute mode is turned on, no audio data will be transmitted to all clients even though the audio transmission is enabled in the Client Settings page. In that case, the following message is displayed.




Internal microphone input gain: Select the gain of the internal audio input according to ambient conditions. Adjust the gain in thirty three steps from +12 db (most sensitive) ~ -34.5 db (least sensitive).

External microphone input: There are two options for external microphone input gain: 0db and 20db.

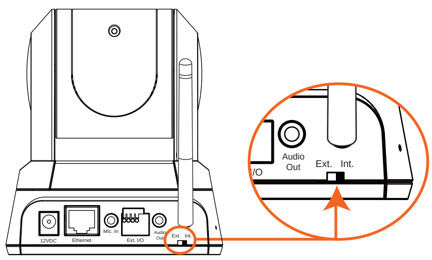
Audio type: Select audio codec AAC or GSM-AMR and the bit rate.

■ AAC targets at performing good sound quality at the cost of higher bandwidth consumption. The bit rates are selectable at the following rates: 16Kbps, 32Kbps, 48Kbps, 64Kbps, 96Kbps and128Kbps.

■ GSM-ARM is designed to optimize speech quality and requires less bandwidth. The bit rates are selectable at the following rates: 4.75Kbps, 5.15Kbps, 5.90Kbps, 6.7Kbps, 7.4Kbps, 7.95Kbps, 10.2Kbps and 12.2Kbps.

***NOTE***

► *The Network Camera offers two inputs to capture audio - internal microphone or external microphone. You can use the internal microphone to capture audio around the Network Camera. Alternatively, you can use external microphone to capture audio. The internal/external microphone switch is located on the back panel of the Network Camera.*



## Motion detection

This section explains how to configure the Network Camera to enable motion detection. A total of three motion detection windows can be configured.




To enable motion detection, follow the steps below:

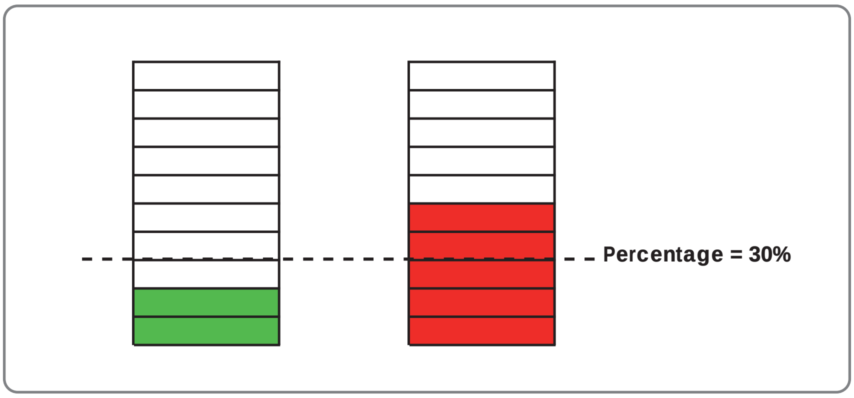
1. Click New to add a new motion detection window.
2. In the Window Name text box, enter a descriptive name for the motion detection window.
■ To move and resize the window, drag-drop the window.
■ To delete window, click X at top right of the window.
3. Define the sensitivity to moving objects and the space ratio of all alerted pixels by moving the Sensitivity and Percentage slider bar.
4. Click Save to take effect.
5. Select Enable motion detection and the motion detection is activated.

For example:



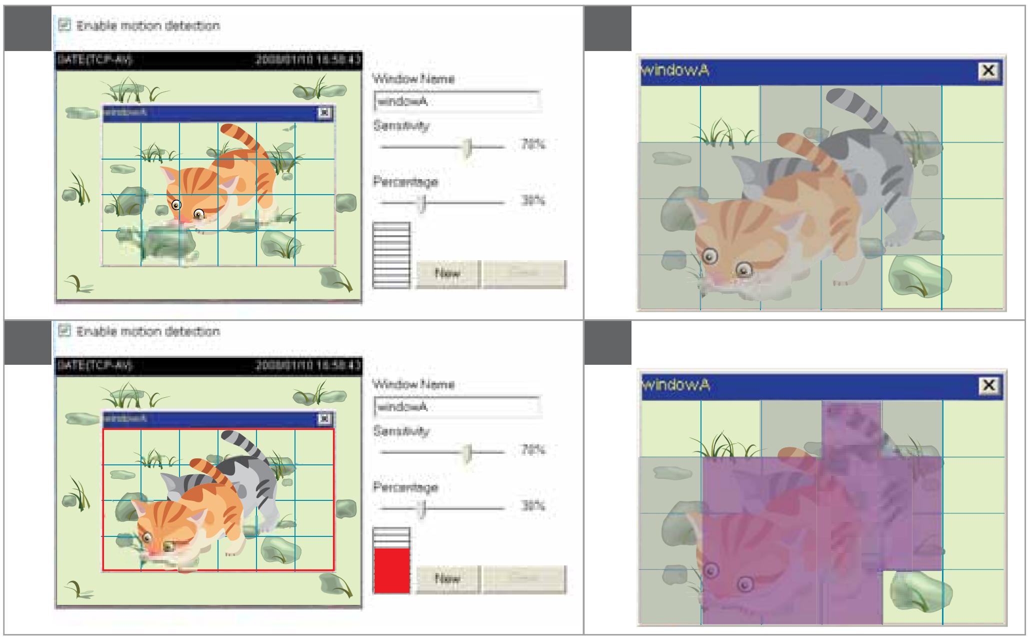

The Percentage Indicator will rise or fall depending on the image variation. When motions are detected by the Network Camera and are judged to exceed the defined threshold, a red bar rises. Meanwhile, the motion detection window will be outlined in red. Photos or videos can be captured instantly and configured to send to the remote server (Email, FTP) by utilizing this feature as a trigger source. For more information on how to plot an event, please refer to Application on page 53.

A green bar indicates that even though motions are detected, the event will not be triggered because the image variations are still falling under the defined threshold.




**_NOTE_**

► *How does motion detection work?*



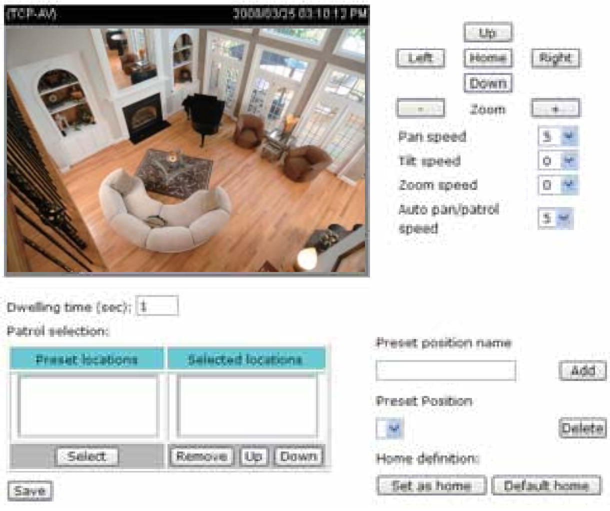

*There are two parameters for setting the motion detection: Sensitivity and Percentage. In the illustration above, frame A and frame B are two sequential images. Pixel differences between the two frames are detected and highlighted in gray (frame C), and will be compared with the sensitivity setting. Sensitivity is a value that expresses the sensitivity to moving objects. Higher sensitivity settings are expected to sense a slight movement while smaller sensitivity settings tend to neglect it. When the sensitivity is set to 70%, the Network Camera defines the pixels in the purple areas as "alerted pixels" (frame D).*

*Percentage is a value that expresses the proportion of "alerted pixels" to all pixels in the motion detection window. In this case, 50% of pixels are identified as "alerted pixels". When the percentage is set to 30%, the motions are judged to exceed the defined threshold; therefore, the motion window will be outlined in red.*

*For applications that require higher security management, it is suggested to set higher sensitivity settings and smaller percentage values.*

# Camera control

This section explains how to control the Network Camera's Pan/Tilt/Zoom operation by a control panel.



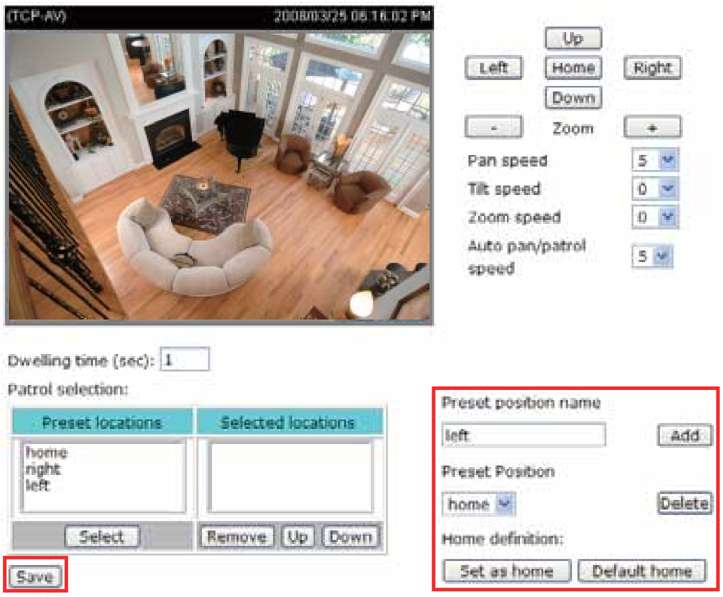

## Preset Position

In this page, you can set preset positions for the Network Camera. You can also select some preset positions for it to partol. A total of twenty preset positions can be configured.

Follow the steps below to set a preset position:

1. Adjust the Network Camera to a desired position using the buttons on the right side of the window. Click Set as home or Default home to define your home definition.
2. In the Preset position name text box, enter a descriptive name for the preset position. The preset position name allows up to forty characters. Click Add to take effect.
3. To remove a preset position from the list, select a preset position name from the Preset Positions drop-down list and then click Delete.
4. Click Save to take effect.

For example:




## Dwelling time (sec)

Set the stop time of each preset location during auto patrol of the network camera.

## Patrol selection

The preset position names will also appear in the Preset locations list on the left. You can also select some preset positions for the Network Camera to patrol.
For example:




The preset positions will also show on the camera control panel on the Home page as below.



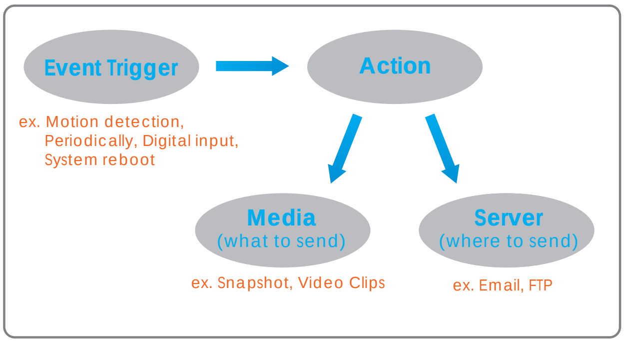

■ Click Go to: The Network Camera will move to the preset position.
■ Click Patrol: The Network Camera will patrol among the selected preset positions (from right to left) for once.

# Application

This section explains how to configure the Network Camera to react in response to particular situations. A typical application is that when a motion is detected, the Network Camera sends buffered images to a FTP server or via e-mail as notifications.



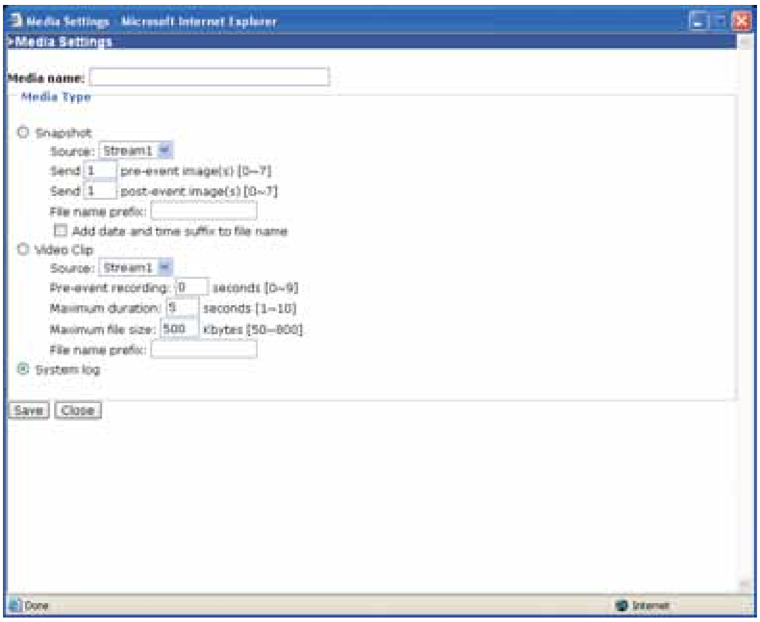

In the illustation on the right side, an event can be triggered by many sources, such as motion detection or external digital input devices. When an event is triggered, you can specify what kind of action will be performed. You can configure the Network Camera to send snapshots or videos to your email address or FTP site.




To start plotting an event, it is suggested to configure server and media columns first so that the Network Camera will know what action shall be performed when a trigger is activated.

## Media Settings

In Media Settings column, click Add to open the media setting page. In this page, you can specify what kind of media to send when a trigger is activated. A total of five media settings can be configured.



Media name: Enter a descriptive name for the media setting.

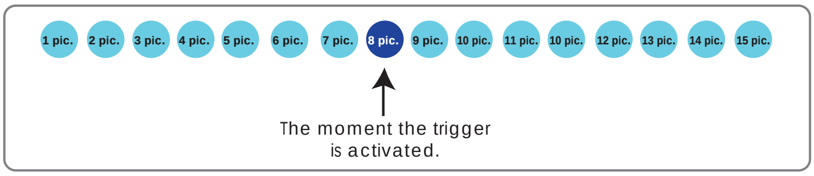
Media Type: There are three choices of media types available: Snapshot, Video Clip, and System log.

Snapshot: Select to send snapshots when a trigger is activated.

■ Source: Select to take snapshots from stream 1 or stream 2.

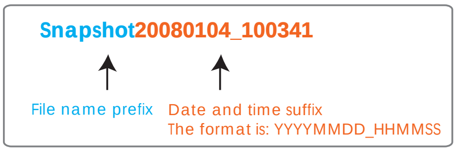
■ Send ☐ pre-event images
The Network Camera has a buffer area; it temporarily holds data up to a certain limit. Specify to capture how many images before a trigger is activated. Up to seven images can be generated.

■ Send ☐ post-event images
Specify to capture how many images after a trigger is activated. Up to seven images can be generated. For example, if both the Send pre-event images and Send post-event images are set to seven, a total of fifteen images are generated after a trigger is activated.

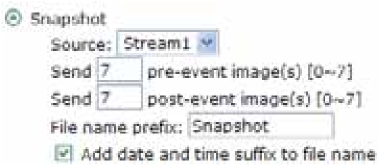



■ File Name Prefix
Enter the text that will be put in front of the file name.

■ Add date and time suffix to the file name
Select this option to add date and time to the file name suffix.




For example:

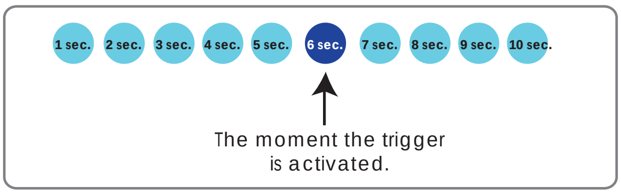



Video Clip: Select to send video clips when a trigger is activated.

■ Source: Select to record video clips from stream 1 or stream 2.

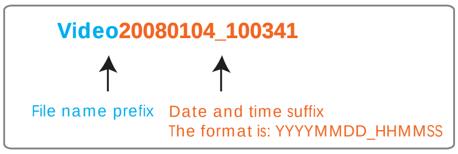
■ Pre-event recording
The Network Camera has a buffer area; it temporarily holds data up to a certain limit. Specify to record video clips for how many seconds before a trigger is activated. Up to nine seconds can be set.

■ Maximum duration
Specify the maximal recording duration in seconds. Up to ten seconds can be set.
For example, if the Pre-event recording is set to five seconds and the Maximum duration is set to ten seconds, the Network Camera continues to record for another four seconds after a trigger is activated.

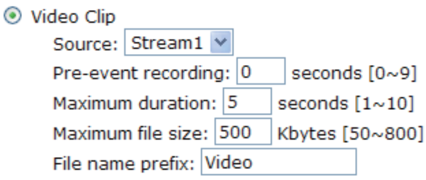


■ Maximum file size
Specify the maximal file size allowed.

■ File Name Prefix
Enter the text that will be put in front of the file name.

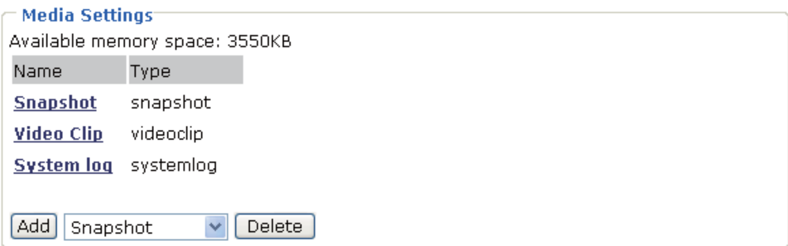



For example:



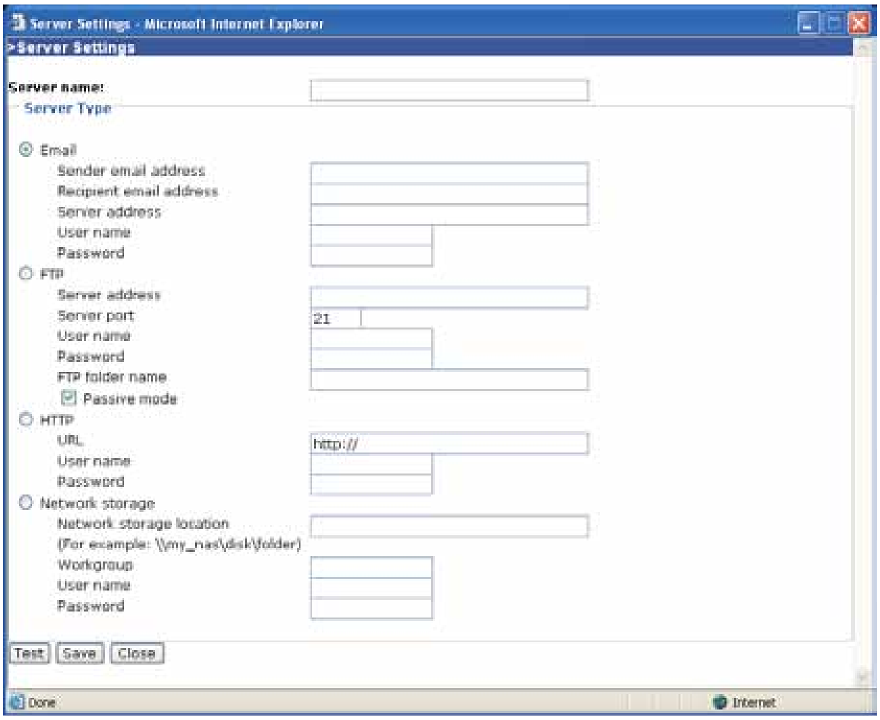

System log: Select to send a system log when a trigger is activated.

When completed, click Save to take effect and then click Close to quit this page. The new media name will appear in the media drop-down list on the Application page as below. To remove a media setting from the list, select a media name from the drop-down list and then click Delete. Note that only when the media setting is not being applied to an event setting can it be deleted.




## Server Settings

In the Server column, click Add to open the server setting page. In this page, you can specify where the notification messages will be send when a trigger is activated. A total of five server settings can be configured.



Server name: Enter a descriptive name for the server setting.

Server Type: There are four choices of server types available: Email, FTP, HTTP, and Network storage.

Email: Select to send the media via Email when a trigger is activated.

■ Sender email address: Enter the email address of the sender.

■ Recipient email address: Enter the email address of the recipient.

■ Server address: Enter the domain name or IP address of the email server.

■ User name: Enter the user name of the email account.

■ Password: Enter the password of the email account.

To verify if the email settings are correctly configured, click Test. The result will be shown in a pop-up window. If it works, you will also receive an email indicating the result.







FTP: Select to send the media to a FTP server when a trigger is activated.

■ Server address: Enter the domain name or IP address of the FTP server.

■ Server port
By default, the FTP port server is set to 21. Also, it can be assigned with another port number between 1025 and 65535.

■ User name: Enter the login name of the FTP account.

■ Password: Enter the password of the FTP account.

■ Remote folder name
Enter a folder to place the media file. If the folder name does not exist, the Network Camera will create one on the FTP server.

■ Passive Mode
Most firewalls do not accept new connections initiated from external requests. If the FTP server supports passive mode, select this option to enable passive mode FTP and allow data transmission to pass through the firewall.

To verify if the FTP settings are correctly configured, click Test. The result will be shown in a pop-up window. If it works, you will also receive a test.txt file on the FTP server.






HTTP: Select to send the media to a HTTP server when a trigger is activated.

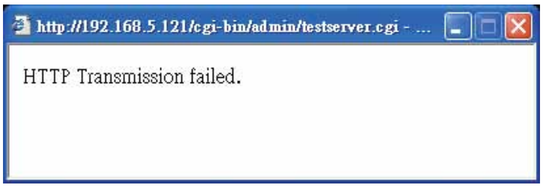
■ URL: Enter the URL of the HTTP server.

■ User name: Enter the user name.

■ Password: Enter the password.

To verify if the HTTP settings are correctly configured, click Test. The result will be shown in a pop-up window. If it works, you will also receive a test.txt file on the HTTP server.




Network storage: Select to send the media to a network storage when a trigger is activated.

■ Network storage location: Enter the path of the network storage.

■ Workgroup: Enter the workgroup for network storage.

■ User name: Enter the user name.

■ Password: Enter the password.

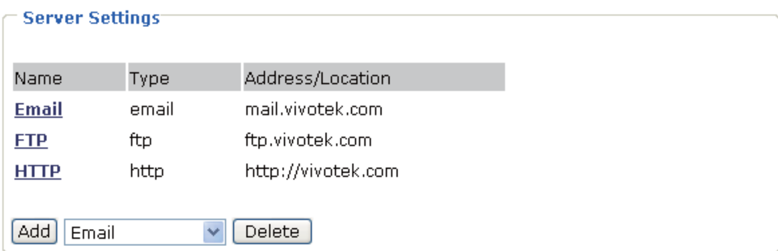
To verify if the network storage settings are correctly configured, click Test. The result will be shown in a pop-up window. If it works, you will also receive a test.txt file on the network storage server.





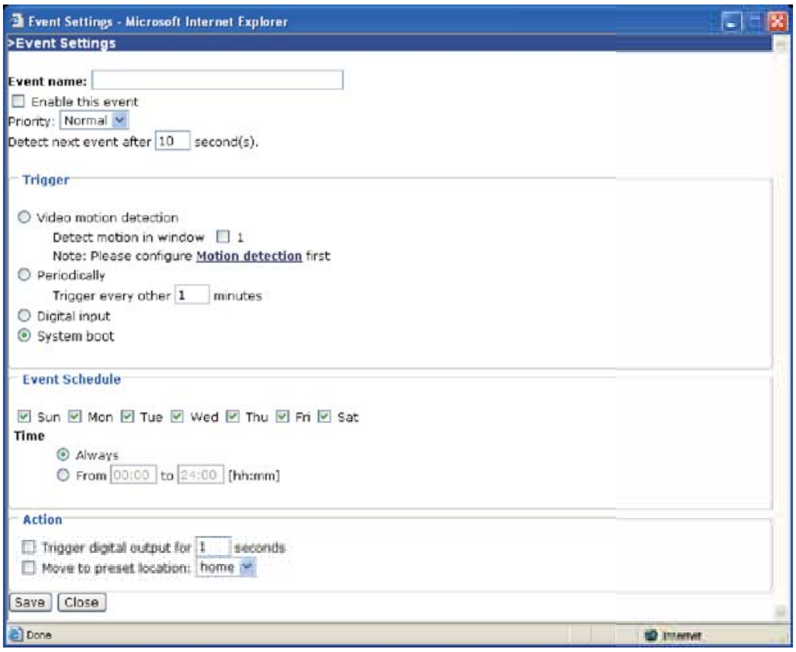


When completed, click Save to take effect and then click Close to quit this page. The new server name will appear in the server drop-down list on the application page as below. To remove a server setting from the list, select a server name from the drop-down list and then click Delete. Note that only when the server setting is not being applied to an event setting can it be deleted.



## Event Settings

In the Event column, click Add to open the event setting page. In this page, you can arrange the three elements -- Trigger, Schedule and Action to plot an event. A total of three event settings can be configured.




Event name: Enter a descriptive name for the event setting.

Enable this event: Select this option to enable this event setting.

Priority: Select the relative importance of this event (High, Normal, and Low). Events with higher priority setting will be executed first.

Detect next event after ☐ seconds: Enter the duration in seconds to pause motion detection after a motion is detected.

An event is an action initiated by user-defined trigger source; it is the causal arrangement of the following three elements: Trigger, Event Schedule, and Action.

Trigger: Also referred as the cause or stimulus, defines when to trigger the Network Camera. The trigger source can be configured to use the Network Camera's built-in motion detection mechanism or external digital input devices.There are four choices of trigger sources:

■ Video motion detection
Select this option to allow the Network Camera to use the built-in motion detection mechanism as a trigger source.

■ Periodically
Select this option to allow the Network Camera to trigger periodically for every other defined minute. At most 999 minutes can be set.

■ Digital input
Select this option to allow the Network Camera to use external digital input device as a trigger source. Depending on your applications, there are choices of digital input devices on the market which helps to sense any changes in temperature, vibration, sound and light, etc.

■ System boot
Select this option to allow the Network Camera to trigger when the power of Network Camera is disconnected.

Event Schedule: The effective period in which the event stays active. Specify the effective period for the event.

■ Select the days on weekly basis.

■ Select the time for recording in 24-hr time format.

Action: Also referred as the effect, defines the action to be performed by the Network Camera when the trigger is activated. Select the action to perfom when a trigger is activated.

■ Trigger D/O for ☐ seconds
Select this option to turn on external digital output device when a trigger is activated. Specify the length of trigger interval in the text box.

■ Move to preset location
Select this option, the Network Camera will move to the preset location when a trigger is activated.

■ Server name / Media name
Select the server and media name to allow the Network Camera to send the media files to the server when a trigger is activated.

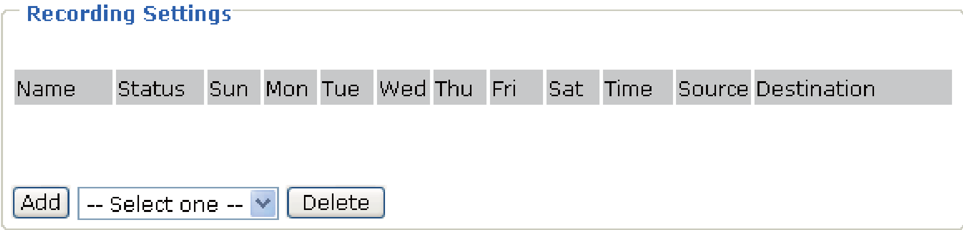
When completed, select Enable this event. Click Save to take effect and then click Close to quit this page. The new event name will appear in the event drop-down list on the application page. To remove an event setting from the list, select an event name from the drop-down list and then click Delete.



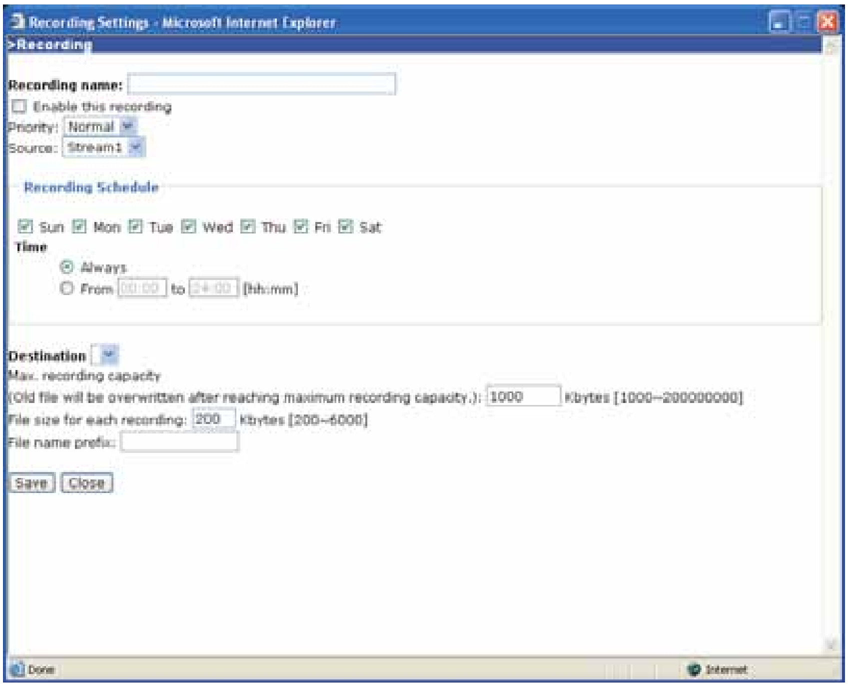
# Recording

This section explains how to configure the recording settings for the Network Camera.

## Recording Settings




Click Add to open the recording setting page. In this page, you can define the recording source, recording schedule and recording capacity. A total of two recording settings can be configured.




<u>Recording name</u>: Enter a descriptive name for the recording setting.

<u>Enable this recording</u>: Select this option to enable video recording.

<u>Priority</u>: Select the relative importance of this recording setting (High, Normal, and Low).

<u>Source</u>: Select the recording source (stream 1 or stream 2).

<u>Recording Schedule</u>: Specify the recording duration.

■ Select the days on weekly basis.

■ Select the time for recording in 24-hr time format.

Destination: Specify a storage destination for the recorded video files. Note that the destination field is empty by default. Please go to Configuration > Application > Server Settings to set a Network storage server; please refer to Server Settings on page 55.

Max. recording capacity: Please note that when the maximum capacity is reached, the oldest file will be overwritten by the latest one.

File size for each recording: Specify the file size for each recording media.

File name prefix: Enter the text that will be put in front of the file name.

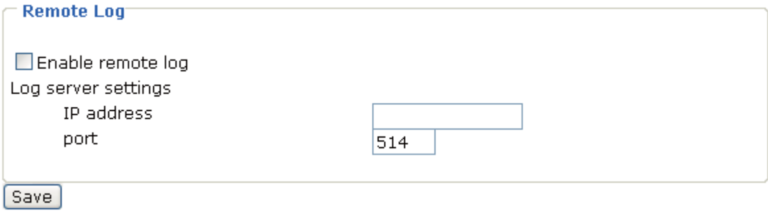
When completed, select Enable this recording. Click Save to take effect and then click Close to quit this page. The new recording name will appear in the recording drop-down list on the recording page. To remove a recording setting from the list, select a recording name from the drop-down list then and click Delete.



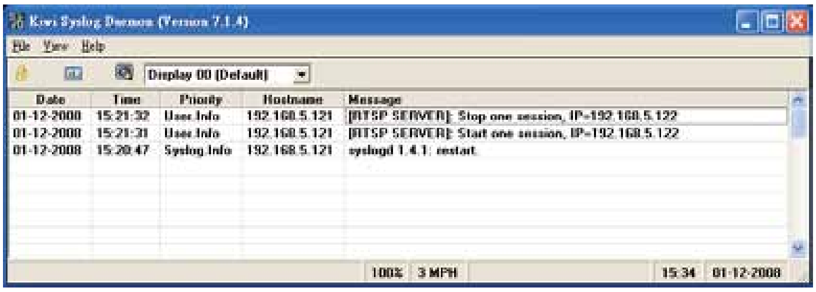
# System log

This section explains how to configure the Network Camera to send system log to remote server as a backup. It is composed of the following two columns: Remote Log and Current Log.

## Remote Log

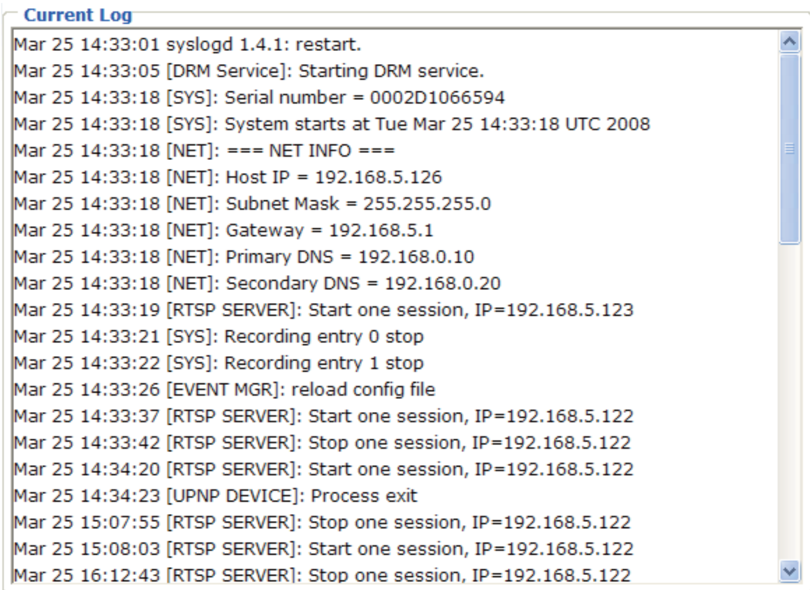



You can configure the Network Camera to send the system log file to a remote server as a log backup. Before utilizing this feature, it is suggested to install a log-recording tool to receive system log messages from the Network Camera. For example, a tool -- Kiwi Syslog Daemon. Visit http://www.kiwisyslog.com/kiwi-syslog-daemon-overview/.




Follow the steps below to set up the remote log:
1. In the IP address text box, enter the IP address of the remote server.
2. In the port text box, enter the port number of the remote server.
3. When completed, select Enable remote log and click Save to take effect.

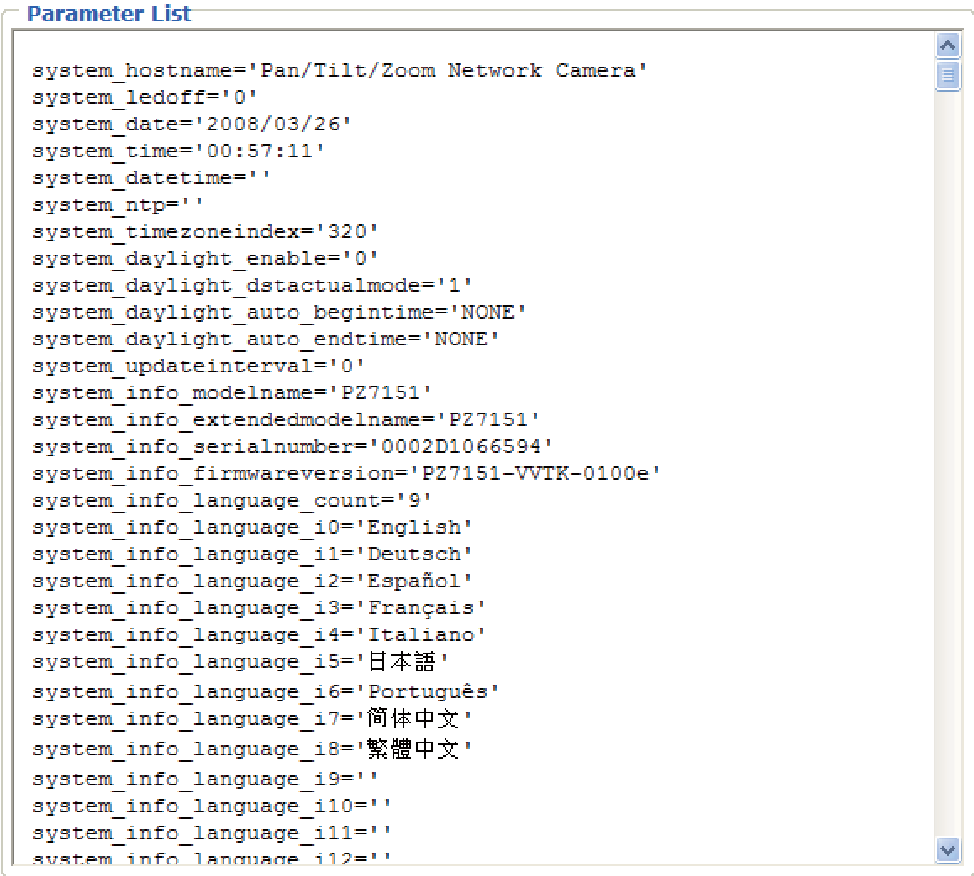
## Current Log




This column displays the system's log in chronological order. The system log is stored in the Network Camera's buffer area and will be overwritten when reaching a certain amount.

## View parameters

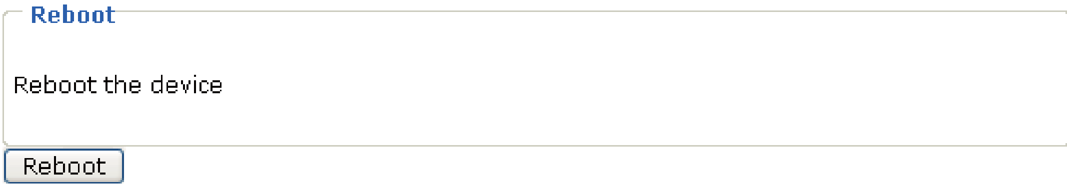
The View parameters page lists the entire system's parameters in alphabetical order. If you need technical assistance, please provide the information listed in this page.



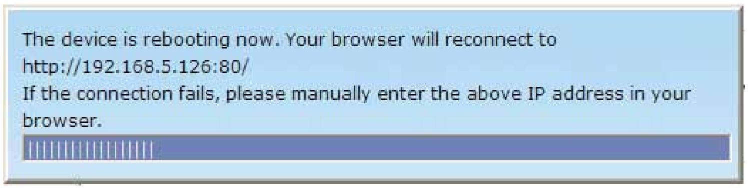
# Maintenance

This chapter explains how to restore the Network Camera to factory default, upgrade firmware version, etc.

## Reboot

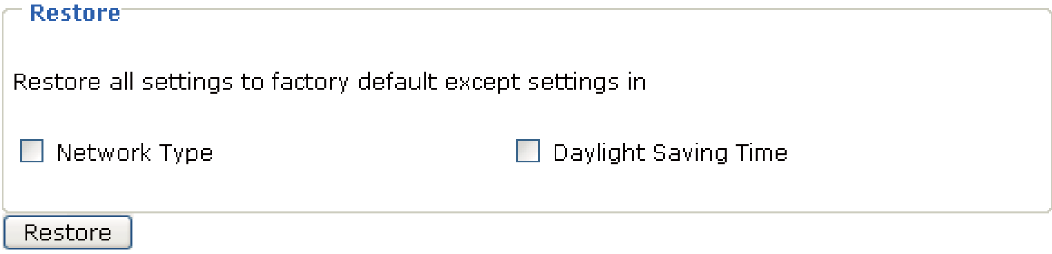



This feature allows you to turn off and then turn on the Network Camera. It takes about one ~ two minutes to complete the process. When completed, the live video will be displayed in your browser. The following message is displayed during the rebooting process.




If the connection fails after rebooting, manually enter the IP address of the Network Camera in the address field to resume the connection.

## Restore



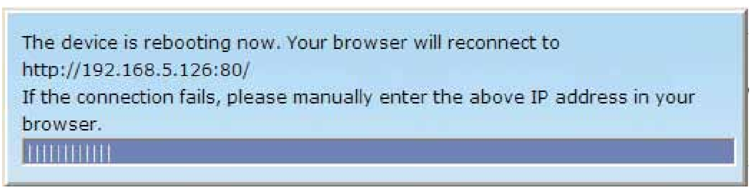

This feature allows you to restore the Network Camera to factory default. Two settings can be excluded:

Network Type: Select this option to retain the Network Type settings (please refer to Network Type on page 30).

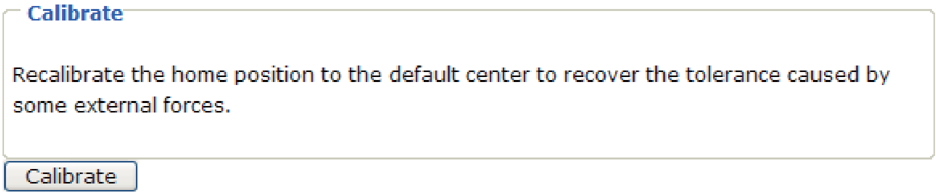
Daylight Saving Time: Select this option to retain the Daylight Saving Time settings (please refer to System on page 24)

If none of the options is selected, all settings will be restored to factory default.

The following message is displayed during the restoring process.

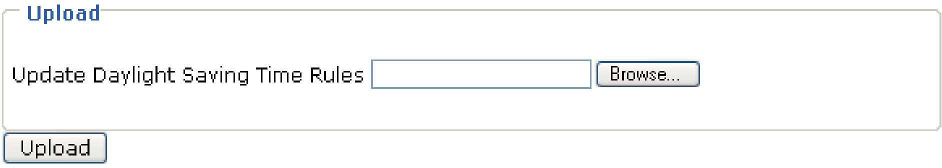


## Calibrate




This feature re-calibrate the home position to the default center to recover the tolerance caused by some external forces. Please note that there is no confirming message box after clicking on Calibrate, the Network Camera will calibrate immediately.

## Upload / Export Daylight Saving Time Configuration File

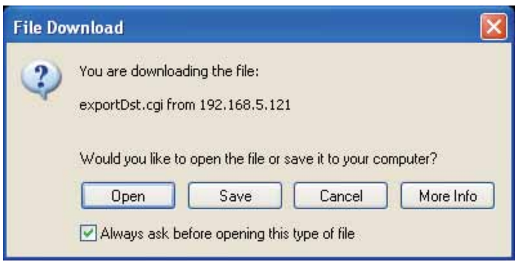




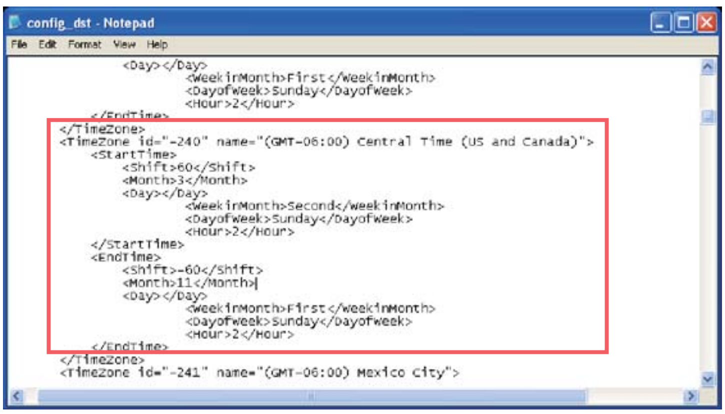


This feature allows you to set the starting time and ending time of DST.
Follow the steps below to set up:

1. In the Export Daylight Saving Time Configuration File Column, click Export to export an Extensible Markup Language (*.xml) file from the Network Camera.
2. Open the XML file using Microsoft® Notepad and locate your time zone; set the starting time and ending time of the DST. When completed, save the file.

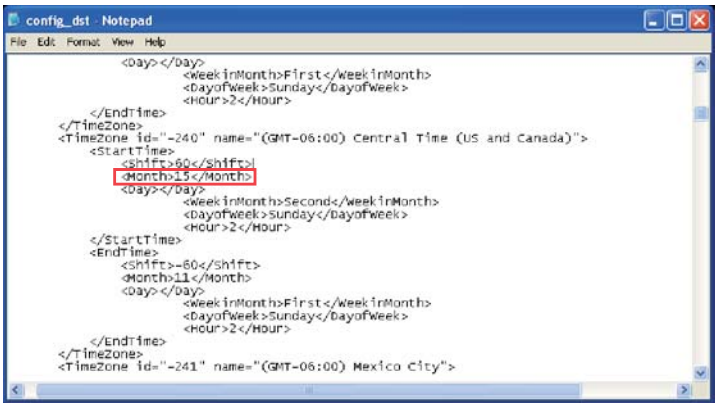



In the example below, the DST begins each year at 2:00 a.m. on the second Sunday in March and ends at 2:00 a.m. on the first Sunday in November.



3. In the Upload Column, click Browse… and specify the XML file.

   If the incorrect date and time is assigned, you will see the following warning message when uploading the file to the Network Camera.



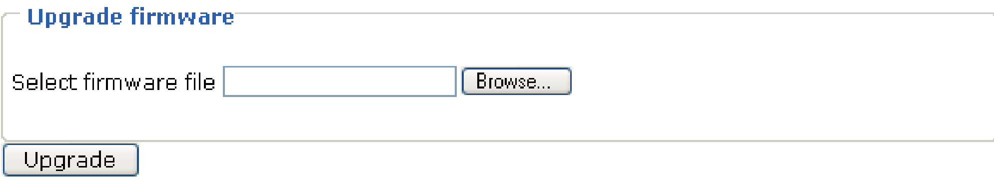




4. Click Upload. To enable the DST, see System Time on page 24.
   The following message is displayed when attempting to upload an incorrect file format.



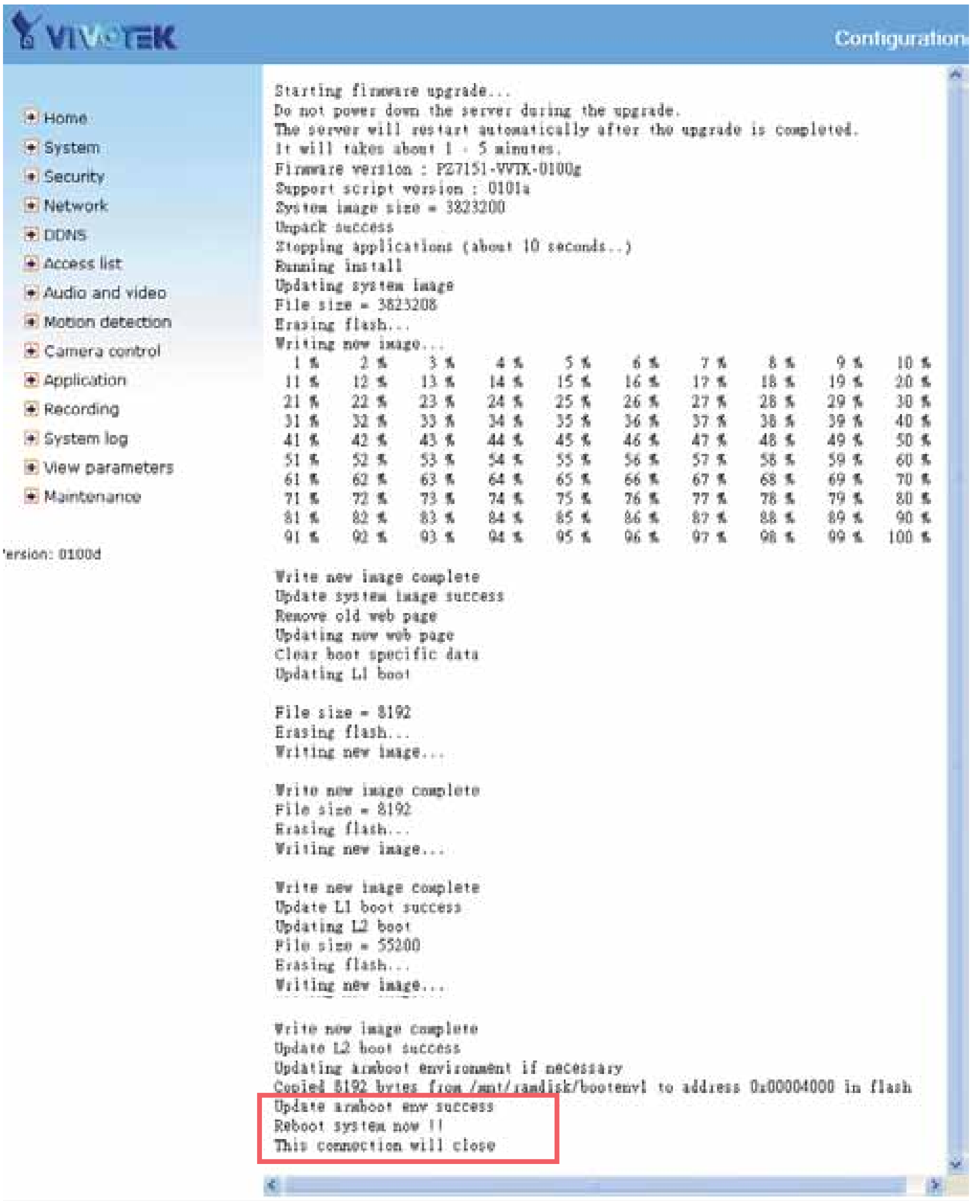

## Upgrade Firmware




This feature allows you to upgrade the firmware on your Network Camera. It takes about five minutes to complete the process.
Note that do not power off the Network Camera during the upgrade.

Follow the steps below to upgrade firmware:
1. Download a new firmware file from VIVOTEK website. The file is in pkg file format.
2. Click Browse… and specify the firmware file.
3. Click Upgrade. The Network Camera starts to upgrade and will reboot automatically when the upgrade completes.

The upgrade is successful as you see “Reboot system now!! This connection will close”. After that, re-access the Network Camera.
The following message is displayed when the upgrade is succeeded.




The following message is displayed when you have selected an incorrect firmware file.

Starting firmware upgrade...
Do not power down the server during the upgrade.
The server will restart automatically after the upgrade is completed.
It will takes about 1 - 5 minutes.
Wrong PKG file format
Unpack fail

# Appendix

## URL Commands of the Network Camera

### Overview

For some customers who already have their own web site or web control application, Network Camera/ Video server can be easily integrated through convenient URLs. This section specifies the external HTTP based application programming interface. The HTTP based camera interface provides the functionality to request a single image, to control camera functions (PTZ, output relay etc.) and to get and set internal parameter values. The image and CGI-requests are handled by the built in Web server.

### Style convention

In URL syntax and in descriptions of CGI parameters, a text within angle brackets denotes a content that is to be replaced with either a value or a string. When replacing the text string also the angle brackets shall be replaced. An example of this is the description of the name for the server, denoted with <servername> in the URL syntax description below, that is replaced with the string myserver in the URL syntax example, also below.

URL syntax' are written with the “**Syntax:**" word written in bold face followed by a box with the referred syntax as seen below. The name of the server is written as <servername>. This is intended to be replaced with the name of the actual server. This can either be a name, e.g., "mywebcam" or "thecam. adomain.net" or the associated IP number for the server, e.g., 192.168.0.220.

Syntax:

```
http://<servername>/cgi-bin/viewer/video.jpg
```

Description of returned data is written with "**Return:**" in bold face followed by the returned data in a box. All data returned as HTTP formatted, i.e., starting with the string HTTP is line separated with a Carriage Return and Line Feed (CRLF) printed as \r\n.

Return:

```
HTTP/1.0 <HTTP code> <HTTP text>\r\n
```

URL syntax examples are written with "**Example:**" in bold face followed by a short description and a light grey box with the example.

**Example:** request a single snapshot image

```
http://mywebserver/cgi-bin/viewer/video.jpg
```

## General CGI URL syntax and parameters

CGI parameters are written in lower-case and as one word without any underscores or other separators. When the CGI request includes internal camera parameters, the internal parameters must be written exactly as they are named in the camera or video server. The CGIs are organized in function related directories under the cgi-bin directory. The file extension of the CGI is required.

Syntax:

```
http://<servername>/cgi-bin/<subdir>[/<subdir>...]/<cgi>.<ext>[?<parameter>=<value>[&<parameter>=<value>...]]
```

**Example:** Setting digital output #1 to active

```
http://mywebserver/cgi-bin/dido/setdo.cgi?do1=1
```

## Security level

| SECURITY LEVEL | SUB-DIRECTORY | DESCRIPTION |
|---|---|---|
| 0 | anonymous | Unprotected. |
| 1 [view] | anonymous, viewer, dido, camctrl | 1. Can view, listen, talk to camera<br>2. Can control dido, ptz of camera |
| 4 [operator] | anonymous, viewer, dido, camctrl, operator | Operator’s access right can modify most of camera’s parameters except some privilege and network options |
| 6 [admin] | anonymous, viewer, dido, camctrl, operator, admin | Administrator’s access right can fully control the camera’s operation. |
| 7 | N/A | Internal parameters. Unable to be changed by any external interface. |

## Get server parameter values

**Note:** The access right depends on the URL directory.

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/anonymous/getparam.cgi?[<parameter>][&<parameter>…]

http://<servername>/cgi-bin/viewer/getparam.cgi?[<parameter>][&<parameter>…]

http://<servername>/cgi-bin/operator/getparam.cgi?[<parameter>][&<parameter>…]

http://<servername>/cgi-bin/admin/getparam.cgi?[<parameter>][&<parameter>…]
```

where the <parameter> should be <group>[_<name>] or <group>[.<name>] If you do not specify the any parameters, all the parameters on the server will be returned. If you specify only <group>, the parameters of related group will be returned.

When query parameter values, the current parameter value are returned.

Successful control request returns parameter pairs as follows.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/html\r\n
Context-Length: <length>\r\n
\r\n
<parameter pair>
```

where <parameter pair> is

<parameter>=<value>\r\n

[<parameter pair>]

<length> is the actual length of content.

**Example:** request IP address and it’s response

```
Request:
http://192.168.0.123/cgi-bin/admin/getparam.cgi?network_ipaddress

Response:
HTTP/1.0 200 OK\r\n
Content-Type: text/html\r\n
Context-Length: 33\r\n
\r\n
network.ipaddress=192.168.0.123\r\n
```

## Set server parameter values

**Note:** The access right depends on the URL directory.

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/anonymous/setparam.cgi? <parameter>=<value> [&<parameter>=<value>…]
[&update=<value>][&return=<return page>]

http://<servername>/cgi-bin/viewer/setparam.cgi? <parameter>=<value> [&<parameter>=<value>…]
[&update=<value>] [&return=<return page>]

http://<servername>/cgi-bin/operator/setparam.cgi? <parameter>=<value> [&<parameter>=<value>…]
[&update=<value>] [&return=<return page>]

http://<servername>/cgi-bin/admin/setparam.cgi? <parameter>=<value> [&<parameter>=<value>…]
[&update=<value>] [&return=<return page>]
```

| Parameter | Value | Description |
|---|---|---|
| <group>_<name> | value to assigned | Assign <value> to the parameter <group>_<name> |
| update | <boolean> | Set to 1 to actually update all fields (no need to use update parameter in each group) |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according the current path. If you omit this parameter, it will redirect to an empty page.<br><br>(note: The return page can be a general HTML file(.htm, .html) or a VIVOTEK server script executable (.vspx) file. It can not be a CGI command. It can not have any extra parameters. This parameter must be put at end of parameter list) |

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/html\r\n
Context-Length: <length>\r\n
\r\n
<parameter pair>
```

where <parameter pair> is

<parameter>=<value>\r\n

[<parameter pair>]

Only the parameters that you set and readable will be returned.

**Example:** Set the IP address of server to 192.168.0.123

```
Request:
http://myserver/cgi-bin/admin/setparam.cgi?network_ipaddress=192.168.0.123

Response:
HTTP/1.0 200 OK\r\n
Content-Type: text/html\r\n
Context-Length: 33\r\n
\r\n
network.ipaddress=192.168.0.123\r\n
```

## Available parameters on the server

Valid values:

| Valid values | Description |
|---|---|
| string[<n>] | Text string shorter than ‘n’ characters. The characters “,’, <,>,& are invalid. |
| password[<n>] | The same as string but display ‘*’ instead |
| integer | Any number between $(-2^{31} – 1)$ and $(2^{31} – 1)$ |
| positive integer | Any number between 0 and $(2^{32} – 1)$ |
| <m> ~ <n> | Any number between ‘m’ and ‘n’ |
| domain name[<n>] | A string limited to contain a domain name shorter than ‘n’ characters (eg. www.ibm.com) |
| email address [<n>] | A string limited to contain a email address shorter than ‘n’ characters (eg. joe@www.ibm.com) |
| ip address | A string limited to contain an ip address (eg. 192.168.1.1) |
| mac address | A string limited to contain mac address without hyphen or colon connected |
| boolean | A boolean value 1 or 0 represents [Yes or No], [True or False], [Enable or Disable]. |
| <value1>,<br><value2>,<br><value3>,<br>... | Enumeration. Only given values are valid. |
| blank | A blank string |
| everything inside <> | As description |

Note: The Network Camera should prevent to restart when parameter changed.

Group: **system**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| hostname | string[40] | 1/6 | Host name of server |
| ledoff | <boolean> | 6/6 | Turn on(0) or turn off(1) all led indicators |
| date | <yyyy/mm/dd>, keep, auto | 6/6 | Current date of system. Set to ‘keep’ keeping date unchanged. Set to ‘auto’ to use NTP to synchronize date. |
| time | <hh:mm:ss>, keep, auto | 6/6 | Current date of system. Set to ‘keep’ keeping date unchanged. Set to ‘auto’ to use NTP to synchronize time. |
| ntp | <domain name>,<br><ip address>,<br><blank> | 6/6 | NTP server<br>*Do not use “skip to invoke default server” for default |

| | | | |
|---|---|---|---|
| timezoneindex | -489 ~ 529 | 6/6 | Indicate timezone and area<br>-480: GMT-12:00 Eniwetok, Kwajalein<br>-440: GMT-11:00 Midway Island, Samoa<br>-400: GMT-10:00 Hawaii<br>-360: GMT-09:00 Alaska<br>-320: GMT-08:00 Las Vegas, San_Francisco, Vancouver<br>-280: GMT-07:00 Mountain Time, Denver<br>-281: GMT-07:00 Arizona<br>-240: GMT-06:00 Central America, Central Time, Mexico City, Saskatchewan<br>-200: GMT-05:00 Eastern Time, New York, Toronto<br>-201: GMT-05:00 Bogota, Lima, Quito, Indiana<br>-160: GMT-04:00 Atlantic Time, Canada, Caracas ,La Paz, Santiago<br>-140: GMT-03:30 Newfoundland<br>-120: GMT-03:00 Brasilia, Buenos Aires, Georgetown, Greenland<br>-80: GMT-02:00 Mid-Atlantic<br>-40: GMT-01:00 Azores, Cape_Verde_IS.<br>0: GMT Casablanca, Greenwich Mean Time:Dublin, Edinburgh, Lisbon, London<br>40: GMT 01:00 Amsterdam, Berlin, Rome, Stockholm, Vienna, Madrid, Paris<br>41: GMT 01:00 Warsaw, Budapest, Bern<br>80: GMT 02:00 Athens, Helsinki, Istanbul, Riga<br>81: GMT 02:00 Cairo<br>82: GMT 02:00 Lebanon, Minsk<br>83: GMT 02:00 Israel<br>120: GMT 03:00 Baghdad, Kuwait, Riyadh, Moscow, St. Petersburg, Nairobi<br>121: GMT 03:00 Iraq<br>140: GMT 03:30 Tehran<br>160: GMT 04:00 Abu Dhabi, Muscat, Baku, Tbilisi, Yerevan<br>180: GMT 04:30 Kabul<br>200: GMT 05:00 Ekaterinburg, Islamabad, Karachi, Tashkent<br>220: GMT 05:30 Calcutta, Chennai, Mumbai, New Delhi<br>230: GMT 05:45 Kathmandu<br>240: GMT 06:00 Almaty, Novosibirsk, Astana, Dhaka, Sri Jayawardenepura<br>260: GMT 06:30 Rangoon<br>280: GMT 07:00 Bangkok, Hanoi, Jakarta, Krasnoyarsk<br>320: GMT 08:00 Beijing, Chongging, Hong Kong, Kuala Lumpur, Singapore, Taipei<br>360: GMT 09:00 Osaka, Sapporo, Tokyo, Seoul, Yakutsk<br>380: GMT 09:30 Adelaide, Darwin<br>400: GMT 10:00 Brisbane, Canberra, Melbourne, Sydney, Guam, Vladivostok<br>440: GMT 11:00 Magadan, Solomon Is., New Caledonia<br>480: GMT 12:00 Aucklan, Wellington, Fiji, Kamchatka, Marshall Is.<br>520: GMT 13:00 Nuku'Alofa |

| | | | |
|---|---|---|---|
| daylight_enable | <boolean> | 6/6 | Enable automatic daylight saving to time zone |
| daylight_ dstactualmode | <boolean> | 6/7 | Check if current time is under daylight saving time. |
| daylight_auto_ begintime | string[19] | 6/7 | Display the current daylight saving begin time. |
| daylight_auto_ endtime | string[19] | 6/7 | Display the current daylight saving end time. |
| updateinterval | 0,<br>3600,<br>86400,<br>604800,<br>2592000 | 6/6 | 0 to Disable automatic time adjustment, otherwise, it means the seconds between NTP automatic update interval. |
| restore | 0,<br><positive integer> | 7/6 | Restore the system parameters to default value after <value> seconds. |
| reset | 0,<br><positive integer> | 7/6 | Restart the server after <value> seconds if <value> is non-negative. |
| restoreexceptnet | <Any value> | 7/6 | Restore the system parameters to default value except (ipaddress, subnet, router, dns1, dns2, pppoe). |
| restoreexceptdst | <Any value> | 7/6 | Restore the system parameters to default value except all daylight saving time settings. |

SubGroup of **system: info** (The fields in this group are unchangeable.)

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| modelname | string[40] | 0/7 | Model name of server |
| serialnumber | <mac address> | 0/7 | 12 characters mac address without hyphen connected |
| firmwareversion | string[40] | 0/7 | The version of firmware, including model, company, and version number in the format. |
| language_count | <integer> | 0/7 | Number of webpage language available on the server |
| language_i <0~(count-1)> | string[16] | 0/7 | Available language lists |

Group: **status**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| di_i<0~(ndi-1)> | <boolean> | 1/7 | 0 => Inactive, normal<br>1 => Active, triggered |
| do_i<0~ndi-1)> | <boolean> | 1/7 | 0 => Inactive, normal<br>1 => Active, triggered |
| onlinenum_rtsp | integer | 6/7 | Current RTSP connection numbers |
| onlinenum_ httppush | integer | 6/7 | Current HTTP push server connection numbers |

Group: **di_i<0~(ndi-1)>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| normalstate | high,<br>low | 1/1 | Indicate whether open circuit or closed circuit represents inactive status |

Group: **do_i<0~(ndo-1)>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| normalstate | open<br>grounded | 1/1 | Indicate whether open circuit or closed circuit represents inactive status |

Group: **security**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| user_i0_name | string[64] | 6/7 | User's name of root |
| user_i<1~20><br>_name | string[64] | 6/7 | User's name |
| user_i0_pass | password [64] | 6/6 | Root's password |
| user_i<1~20><br>_pass | password [64] | 7/6 | User's password |
| user_i0_privilege | admin | 6/7 | Root's privilege |
| user_i<1~20><br>_ privilege | viewer,<br>operator,<br>admin | 6/6 | User's privilege |

Group: **network**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| type | lan,<br>pppoe | 6/6 | Network connection type |
| resetip | <boolean> | 6/6 | 1 => get ipaddress, subnet, router, dns1, dns2 from DHCP server at next reboot<br>0 => use preset ipaddress, subnet, rounter, dns1, and dns2 |
| ipaddress | <ip address> | 6/6 | IP address of server |
| subnet | <ip address> | 6/6 | Subnet mask |
| router | <ip address> | 6/6 | Default gateway |
| dns1 | <ip address> | 6/6 | Primary DNS server |
| dns2 | <ip address> | 6/6 | Secondary DNS server |
| wins1 | <ip address> | 6/6 | Primary WINS server |
| wins2 | <ip address> | 6/6 | Secondary WINS server |

Subgroup of **network: ftp**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| port | 21, 1025~65535 | 6/6 | Local ftp server port |

Subgroup of **network: http**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| port | 80,<br>1025~65535 | 6/6 | HTTP port |
| alternateport | 1025~65535 | 6/6 | Alternative HTTP port |
| authmode | basic, digest | 1/6 | HTTP authentication mode |
| s0_accessname | string[32] | 1/6 | Http server push access name for stream 1 |
| s1_accessname | string[32] | 1/6 | Http server push access name for stream 2 |

Subgroup of **network: https**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| port | 443, 1025~65535 | 6/6 | https port |

Subgroup of **network: rtsp**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| port | 554, 1025 ~ 65535 | 6/6 | RTSP port |
| authmode | disable<br>basic<br>digest | 1/6 | RTSP authentication mode |
| s0_accessname | string[32] | 1/6 | RTSP access name for stream 1 |
| s1_accessname | string[32] | 1/6 | RTSP access name for stream 2 |
| s0_audiotrack | <integer> | 6/6 | The current audio track for stream1.<br>-1 => audio mute |
| s1_audiotrack | <integer> | 6/6 | The current audio track for stream2.<br>-1 => audio mute |

Subgroup of **rtsp_s<0~(n-1)>: multicast**, n is stream count

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| alwaysmulticast | <boolean> | 4/4 | Enable always multicast |
| ipaddress | <ip address> | 4/4 | Multicast IP address |
| videoport | 1025 ~ 65535 | 4/4 | Multicast video port |
| audioport | 1025 ~ 65535 | 4/4 | Multicast audio port |
| ttl | 1 ~ 255 | 4/4 | Mutlicast time to live value |

Subgroup of **network: sip**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| port | 5060, 1025 ~ 65535 | 6/6 | SIP port |

Subgroup of **network: rtp**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| videoport | 1025 ~ 65535 | 6/6 | Video channel port for RTP |
| audioport | 1025 ~ 65535 | 6/6 | Audio channel port for RTP |

Subgroup of **network: pppoe**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| user | string[128] | 6/6 | PPPoE account user name |
| pass | password[64] | 6/6 | PPPoE account password |

Group: **wireless**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| ssid | string[32] | 6/6 | SSID for wireless lan settings.<br>The valid characters are [A-Z] [a-z] [0-9] [ / ] [ . ] [ _ ] [ = ] [  ] [ - ] [ + ] [ * ]. |
| wlmode | Infra,<br>Adhoc | 6/6 | wireless mode<br>Infra => Infrastructure |
| channel | 1~11 or<br>1 ~ 13 or<br>10~11 or<br>10~13 or<br>1~14 | 6/6 | USA and Canada<br>Europe<br>Spain<br>France<br>All |
| txrate | NONE, 1M, 2M, 5.5M, 11M, 6M, 9M, 12M, 18M, 24M, 36M, 48M, 54M, Auto | 6/6 | Maximum oolean rate in Mbps |
| encrypt | 0~3 | 6/6 | encryption method<br>0 => NONE,<br>1 => WEP,<br>2 => WPA,<br>3 => WPA2PSK |
| authmode | OPEN, SHARED | 6/6 | Authentication mode |
| keylength | 64, 128 | 6/6 | key length in bits |
| keyformat | HEX, ASCII | 6/6 | key1 ~ key4 presentation format |
| keyselect | 1~4 | 6/6 | default key number |
| key1 | password [32] | 6/6 | WEP key1 for encryption.<br>The valid characters are [A-Z] [a-z] [0-9]. |
| key2 | password [32] | 6/6 | WEP key2 for encryption.<br>The valid characters are [A-Z] [a-z] [0-9]. |
| key3 | password [32] | 6/6 | WEP key3 for encryption.<br>The valid characters are [A-Z] [a-z] [0-9]. |
| key4 | password [32] | 6/6 | WEP key4 for encryption.<br>The valid characters are [A-Z] [a-z] [0-9]. |
| domain | 'U' for USA<br>'C' for Canada<br>'E' for Euro<br>'S' for Spain<br>'F' for France<br>'I' for Isrel<br>'A' for All | 6/7 | Wireless domain |
| algorithm | AES, TKIP | 6/6 | Algorithm |
| presharedkey | password [63] | 6/6 | WPA mode pre-shared key.<br>The valid characters are [A-Z] [a-z] [0-9]. |

Group: **ipfilter**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| allow_i<0~9>_start | 1.0.0.0 ~ 255.255.255.255 | 6/6 | Allowed starting IP address for RTSP connection |
| allow_i<0~9>_end | 1.0.0.0 ~ 255.255.255.255 | 6/6 | Allowed ending IP address for RTSP connection |
| deny_i<0~9>_start | 1.0.0.0 ~ 255.255.255.255 | 6/6 | Denied starting IP address for RTSP connection |

| | | | |
|---|---|---|---|
| deny_i<0~9>_end | 1.0.0.0 ~ 255.255.255.255 | 6/6 | Denied ending IP address for RTSP connection |

Group: **videoin**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| cmosfreq | 50, 60 | 4/4 | CMOS frequency |
| whitebalance | auto, indoor, fluorescent, outdoor | 4/4 | auto, indoor, fluorescent, outdoor |
| enableblc | <boolean> | 4/4 | Enable backlight compensation |
| agc | normal, max | 4/4 | Set auto gain control to normal level or MAX level |

Group: **videoin_c<0~(n-1)>** for n channel products, m is stream number

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| color | 0,<br>1 | 4/4 | 0 => monochrome<br>1 => color |
| flip | <boolean> | 4/4 | Flip the image |
| mirror | <boolean> | 4/4 | Mirror the image |
| ptzstatus | <integer> | 1/7 | An 32-bits integer, each bit can be set separately as follows:<br>Bit 0 => Support Network Camera control function. 0(not support), 1(support)<br>Bit 1 => **Build-in** or **external** Network Camera. 0(external), 1(build-in)<br>Bit 2 => Support **pan** operation. 0(not support), 1(support)<br>Bit 3 => Support **tilt** operation. 0(not support), 1(support)<br>Bit 4 => Support **zoom** operation. 0(not support), 1(support)<br>Bit 5 => Support **focus** operation. 0(not support), 1(support) |
| text | string[16] | 4/4 | Enclosed caption |
| imprinttimestamp | <boolean> | 4/4 | Overlay time stamp on video |
| maxexposure | 1~120 | 4/4 | Maximum exposure time |
| options | quality, framerate | 4/4 | To customize video quality first or video frame rate first. |
| s<0~(m-1)>_codectype | mpeg4,<br>mjpeg | 4/4 | Video codec type<br>mpeg4 => MPEG-4<br>mjpeg => JPEG |
| s<0~(m-1)>_resolution | 176x144,<br>320x240,<br>640x480 | 4/4 | Video resolution in pixel<br>176x144 => 176x144<br>320x240 => 320x240<br>640x480 => 640x480 |
| s<0~(m-1)>_mpeg4_intraperiod | 250,<br>500,<br>1000,<br>2000,<br>3000,<br>4000, | 4/4 | The period of intra frame in milliseconds<br>250 => 1/4 S<br>500 => 1/2 S<br>1000 =>1 S<br>2000 => 2 S<br>3000 => 3 S<br>4000 => 4 S |
| s<0~(m-1)>_mpeg4_ratecontrolmode | cbr,<br>vbr | 4/4 | cbr => constant bitrate<br>vbr => fix quality |

| | | | |
|---|---|---|---|
| s<0~(m-1)>_ mpeg4_quant | 1,<br>2,<br>3,<br>4,<br>5 | 4/4 | Quality of video when choosing vbr in “ratecontrolmode”. 1 is worst quality and 5 is the best quality.<br>1 => medium<br>2 => standard<br>3 => good<br>4 => detailed<br>5 => excellent |
| s<0~(m-1)>_ mpeg4_bitrate | 20000,<br>30000,<br>40000,<br>50000,<br>64000,<br>128000,<br>256000,<br>384000,<br>512000,<br>768000,<br>1000000,<br>1200000,<br>1500000,<br>2000000,<br>3000000,<br>4000000 | 4/4 | Set bit rate in bps when choose cbr in “ratecontrolmode”.<br>20000 => 20 Kbps<br>30000 => 30 Kbps<br>40000 => 40 Kbps<br>50000 => 50 Kbps<br>64000 => 64 Kbps<br>128000 => 128 Kbps<br>256000 => 256 Kbps<br>512000 => 512 Kbps<br>768000 => 768 Kbps<br>1000000 => 1 Mbps<br>1500000 => 1.5 Mbps<br>2000000 => 2 Mbps<br>3000000 => 3 Mbps<br>4000000 => 4 Mbps |
| s<0~(m-1)>_ mpeg4_ maxframe | 1,<br>2,<br>3,<br>5,<br>10,<br>15,<br>20,<br>25,<br>30 (only for 60Hz) | 4/4 | Set maximum frame rate in fps (for MPEG-4).<br>1 => 1 fps<br>2 => 2 fps<br>3 => 3 fps<br>5 => 5 fps<br>8 => 8 fps<br>10 => 10 fps<br>15 => 15 fps<br>20 => 20 fps<br>25 => 25 fps<br>30 => 30 fps (only for 60Hz) |
| s<0~(m-1)>_ mjpeg_quant | 1,<br>2,<br>3,<br>4,<br>5 | 4/4 | Quality of jpeg video. 1 is worst quality and 5 is the best quality.<br>1 => medium<br>2 => standard<br>3 => good<br>4 => detailed<br>5 => excellent |
| s<0~(m-1)>_ mjpeg_ maxframe | 1,<br>2,<br>3,<br>5,<br>10,<br>15,<br>20,<br>25,<br>30 (only for 60Hz) | 4/4 | Set maximum frame rate in fps (for JPEG).<br>1 => 1 fps<br>2 => 2 fps<br>3 => 3 fps<br>5 => 5 fps<br>8 => 8 fps<br>10 => 10 fps<br>15 => 15 fps<br>20 => 20 fps<br>25 => 25 fps<br>30 => 30 fps (only for 60Hz) |

Group: **audioin_c<0~ (n-1)>** for n channel products

| Name | Value | Security (get/set) | Description |
| --- | --- | --- | --- |
| source | micin,<br>linein | 4/4 | micin => use external microphone input<br>linein => use line input, i.e. internal microphone |
| mute | 0,<br>1 | 4/4 | Enable audio mute<br>0 => Disable<br>1 => Enable |
| gain | 0~31 | 4/4 | Gain of input<br>31 => +12 dB<br>30 => +10.5 dB<br>29 => +9 dB<br>28 => +7.5 dB<br>27 => +6 dB<br>26 => +4.5 dB<br>25 => +3 dB<br>24 => +1.5 dB<br>23 => 0 dB<br>22 => -1.5 dB<br>21 => -3 dB<br>20 => -4.5 dB<br>19 => -6 dB<br>18 => -7.5 dB<br>17 => -9 dB<br>16 => -10.5 dB<br>15 => -12 dB<br>14 => -13.5 dB<br>13 => -15 dB<br>12 => -16.5 dB<br>11 => -18 dB<br>10 => -19.5 dB<br>9 => -21 dB<br>8 => -22.5 dB<br>7 => -24 dB<br>6 => -25.5 dB<br>5 => -27 dB<br>4 => -28.5 dB<br>3 => -30 dB<br>2 => -31.5 dB<br>1 => >-33 dB<br>0 => -34.5 dB |
| boostmic | 0<br>1 | 4/4 | Enable microphone boost<br>0 => 0db<br>1 => 20db |
| s<0~(m-1)>_<br>codectype | aac4,<br>gamr | 4/4 | Set audio codec type for input<br>aac4 => AAC<br>gamr => GSM-AMR |
| s<0~(m-1)>_<br>aac4_bitrate | 16000,<br>32000,<br>48000,<br>64000,<br>96000<br>128000 | 4/4 | Set AAC4 bitrate in bps<br>16000 => 16 Kbps<br>32000 => 32 Kbps<br>48000 => 48 Kbps<br>64000 => 64 Kbps<br>96000 => 96 Kbps<br>128000 => 128 Kbps |

| | | | |
|---|---|---|---|
| s<0~(m-1)>_ gamr_bitrate | 4750, 5150, 5900, 6700, 7400, 7950, 10200, 12200 | 4/4 | Set AMR bitrate in bps<br>4750 => 4.75 Kbps<br>5150 => 5.15 Kbps<br>5900 => 5.90 Kbps<br>6700 => 6.7 Kbps<br>7400 => 7.4 Kbps<br>7950 => 7.95 Kbps<br>10200 => 10.2 Kbps<br>12200 => 12.2 Kbps |

Group: **image_c<0~(n-1)>** for n channel products

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| brightness | -5 ~ 5 | 4/4 | Adjust brightness of image according to mode settings. |
| saturation | -5 ~ 5 | 4/4 | Adjust saturation of image according to mode settings. |
| contrast | -5 ~ 5 | 4/4 | Adjust contrast of image according to mode settings. |

Group: **imagepreview_c<0~(n-1)>** for n channel products

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| brightness | -5 ~ 5 | 4/4 | Preview of adjusting brightness of image according to mode settings. |
| saturation | -5 ~ 5 | 4/4 | Preview of adjusting saturation of image according to mode settings. |
| contrast | -5 ~ 5 | 4/4 | Preview of adjusting contrast of image according to mode settings. |

Group: **motion_c<0~(n-1)>** for n channel product

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enable | <boolean> | 4/4 | Enable motion detection |
| win_i<0~2>_ enable | <boolean> | 4/4 | Enable motion window 1~3 |
| win_i <0~2>_ name | string[14] | 4/4 | Name of motion window 1~3 |
| win_i <0~2>_left | 0 ~ 320 | 4/4 | Left coordinate of window position. |
| win_i <0~2>_top | 0 ~ 240 | 4/4 | Top coordinate of window position. |
| win_i <0~2>_ width | 0 ~ 320 | 4/4 | Width of motion detection window. |
| win_i<0~2>_ height | 0 ~ 240 | 4/4 | Height of motion detection window. |
| win_i<0~2>_ objsize | 0 ~ 100 | 4/4 | Percent of motion detection window. |
| win_i<0~2>_ sensitivity | 0 ~ 100 | 4/4 | Sensitivity of motion detection window. |

Group: **ddns**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enable | <boolean> | 6/6 | Enable or disable the dynamic dns. |

| | | | |
|---|---|---|---|
| provider | Safe100,<br>DyndnsDynamic,<br>DyndnsCustom,<br>TZO,<br>DHS,<br>DynInterfree,<br>CustomSafe100 | 6/6 | Safe100 => safe100.net<br>DyndnsDynamic => dyndns.org (dynamic)<br>DyndnsCustom => dyndns.org (custom)<br>TZO => tzo.com<br>DHS => dhs.org<br>DynInterfree =>dyn-interfree.it<br>CustomSafe100 =>Custom server using safe100 method |
| <provider>_ hostname | string[128] | 6/6 | Your dynamic hostname. |
| <provider>_ usernameemail | string[64] | 6/6 | Your user or email to login ddns service provider |
| <provider>_ passwordkey | string[64] | 6/6 | Your password or key to login ddns service provider |
| <provider>_ servername | string[128] | 6/6 | The server name for safe100. (This field only exists for provider is customsafe100) |

Group: **upnppresentation**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enable | <boolean> | 6/6 | Enable or disable the UPNP presentation service. |

Group: **upnpportforwarding**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enable | <boolean> | 6/6 | Enable or disable the UPNP port forwarding service. |
| upnpnatstatus | 0~3 | 6/7 | The status of UpnP port forwarding, used internally.<br>0 => OK<br>1 => FAIL<br>2 => no IGD router<br>3 => no need to do port forwarding |

Group: **syslog**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enableremotelog | <boolean> | 6/6 | Enable remote log |
| serverip | <IP address> | 6/6 | Log server IP address |
| serverport | 514,<br>1025~65535 | 6/6 | Server port used for log |
| level | 0~7 | 6/6 | The levels to distinguish the importance of information.<br>0 => LOG_EMERG<br>1 => LOG_ALERT<br>2 => LOG_CRIT<br>3 => LOG_ERR<br>4 => LOG_WARNING<br>5 => LOG_NOTICE<br>6 => LOG_INFO<br>7 => LOG_DEBUG |

Group: **camctrl_c<0~(n-1)>** for n channel product

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| panspeed | -5 ~ 5 | 1/4 | Pan speed -5 ~ 5 |
| tiltspeed | -5 ~ 5 | 1/4 | Tilt speed -5 ~ 5 |
| zoomspeed | -5 ~ 5 | 1/4 | Zoom speed -3 ~ +3 |
| autospeed | 1 ~ 5 | 1/4 | Auto pan/patrol speed 1 ~ 5 |
| dwelling | 0 ~ 9999 | 1/4 | Time to dwelling when patrol |
| axisx | -8250~ 8250 | 1/4 | Axis X coordinate, used internally |
| axisy | -560 ~ 1664 | 1/4 | Axis Y coordinate, used internally |
| axisz | 0 ~ 780 | 1/4 | Axis Z coordinate, used internally |
| defaulthome | 0,1 | 1/4 | 0 => user define home<br>1 => default home |
| preset_i<0~19>_name | string[40] | 1/4 | The name of preset location |
| preset_i<0~19>_pan | -8250 ~ 8250 | 1/4 | The axis x coordinate of each preset location |
| preset_i<0~19>_tilt | -560 ~ 1664 | 1/4 | The axis y coordinate of each preset location |
| preset_i<0~19>_zoom | 0 ~ 780 | 1/4 | The axis z coordinate of each preset location |
| patrol_i<0~39>_name | string[40] | 1/4 | The name of patrol location |

Group: capability

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| api_http_version | 0200a | 0/7 | The HTTP API version. |
| bootuptime | <positive integer> | 0/7 | The server bootup time |
| nir | 0,<br><positive integer> | 0/7 | Number of IR interface |
| ndi | 0,<br><positive integer> | 0/7 | Number of digital input |
| ndo | 0,<br><positive integer> | 0/7 | Number of digital output |
| naudioin | 0,<br><positive integer> | 0/7 | Number of audio input |
| naudioout | 0,<br><positive integer> | 0/7 | Number of audio output |
| nvideoin | <positive integer> | 0/7 | Number of video input |
| nmediastream | <positive integer> | 0/7 | Number of media stream per channel |
| nvideosetting | <positive integer> | 0/7 | Number of video settings per channel |
| naudiosetting | <positive integer> | 0/7 | Number of audio settings per channel |
| nuart | 0,<br><positive integer> | 0/7 | Number of UART interface |
| ptzenabled | <positive integer> | 0/7 | An 32-bits integer, each bit can be set separately as follows:<br>Bit 0 => Support Network Camera control function<br>0(not support), 1(support)<br>Bit 1 => Build-in or external Network Camera.<br>0(external), 1(build-in)<br>Bit 2 => Support pan operation. 0(not support), 1(support)<br>Bit 3 => Support tilt operation. 0(not support), 1(support)<br>Bit 4 => Support zoom operation. 0(not support), 1(support)<br>Bit 5 => Support focus operation. 0(not support), 1(support) |

| | | | |
|---|---|---|---|
| protocol_https | <boolean> | 0/7 | Indicate whether to support http over SSL |
| protocol_rtsp | <boolean > | 0/7 | Indicate whether to support rtsp |
| protocol_sip | <boolean> | 0/7 | Indicate whether to support sip |
| protocol_ maxconnection | <positive integer> | 0/7 | The maximum allowed simultaneous connections |
| protocol_ rtp_multicast_ scalable | <boolean> | 0/7 | Indicate whether to support scalable multicast |
| protocol_rtp_ multicast_ backchannel | <boolean> | 0/7 | Indicate whether to support backchannel multicast |
| protocol_rtp_tcp | <boolean> | 0/7 | Indicate whether to support rtp over tcp |
| protocol_rtp_http | <boolean> | 0/7 | Indicate whether to support rtp over http |
| protocol_spush_ mjpeg | <boolean> | 0/7 | Indicate whether to support server push motion jpeg |
| protocol_snmp | <boolean> | 0/7 | Indicate whether to support snmp |
| videoin_type | 0,<br>1,<br>2 | 0/7 | 0 => Interlaced CCD<br>1 => Progressive CCD<br>2 => CMOS |
| videoin_ resolution | <a list of the available resolution separates by comma> | 0/7 | Available resolutions list |
| videoin_codec | <a list of the available codec types separaters by comma> | 0/7 | Available codec list |
| videoout_codec | <a list of the available codec types separaters by comma> | 0/7 | Available codec list |
| audio_aec | <boolean> | 0/7 | Indicate whether to support acoustic echo cancellation |
| audio_extmic | <boolean> | 0/7 | Indicate whether to support external microphone input |
| audio_linein | <boolean> | 0/7 | Indicate whether to support external line input |
| audio_lineout | <boolean> | 0/7 | Indicate whether to support line output |
| audio_ headphoneout | <boolean> | 0/7 | Indicate whether to support headphone output |
| audioin_codec | <a list of the available codec types separaters by comma> | 0/7 | Available codec list |
| audioout_codec | <a list of the available codec types separaters by comma> | 0/7 | Available codec list |
| uart_httptunnel | <boolean> | 0/7 | Indicate whether to support the http tunnel for uart transfer |
| transmission_ mode | Tx, Rx | 0/7 | Indicate what kind of transmission mode the machine used. TX: server, Rx: receiver box |
| network_wire | <boolean> | 0/7 | Indicate whether to support the Ethernet |
| network_wireless | <boolean> | 0/7 | Indicate whether to support the wireless |
| wireless_ 802dot11b | <boolean> | 0/7 | Indicate whether to support the wireless 802.11b+ |
| wireless_ 802dot11g | <boolean> | 0/7 | Indicate whether to support the wireless 802.11g |

| | | | |
|---|---|---|---|
| wireless_<br>encrypt_wep | <boolean> | 0/7 | Indicate whether to support the wireless WEP |
| wireless_<br>encrypt_wpa | <boolean> | 0/7 | Indicate whether to support the wireless WPA |
| wireless_encrypt<br>_wpa2 | <boolean> | 0/7 | Indicate whether to support the wireless WPA2 |

Group: **event_i<0~2>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| name | string[40] | 6/6 | The identification of this entry |
| enable | 0,<br>1 | 6/6 | To enable or disable this event.<br>0 => Disable<br>1 => Enable |
| priority | 0,<br>1,<br>2 | 6/6 | Indicate the priority of this event.<br>0 => indicates low priority.<br>1 => indicates normal priority.<br>2 => indicates high priority. |
| delay | 1~999 | 6/6 | Delay seconds before detect next event. |
| trigger | boot,<br>di,<br>motion,<br>seq | 6/6 | Indicate the trigger condition.<br>boot => system boot.<br>di => digital input.<br>motion => video motion detection.<br>seq => periodic condition. |
| di | <integer> | 6/6 | Indicate which di detected.<br>This field is required when trigger condition is “di”.<br>One bit represents one digital input. The LSB indicates DI 0. |
| mdwin | <integer> | 6/6 | Indicate which motion detection windows detected.<br>This field is required when trigger condition is “md”.<br>One bit represents one window.<br>The LSB indicates the 1st window.<br>For example, to detect the 1st and 3rd windows, set mdwin as 5. |
| inter | 1~999 | 6/6 | Interval of period snapshot in minute. This field is used when trigger condition is “seq”. |
| weekday | <interger> | 6/6 | Indicate which weekday is scheduled.<br>One bit represents one weekday.<br>Bit0 (LSB) => Saturday.<br>Bit1 => Friday.<br>Bit2 => Thursday.<br>Bit3 => Wednesday.<br>Bit4 => Tuesday.<br>Bit5 => Monday.<br>Bit6 => Sunday.<br>For example, to detect events on Friday and Sunday, set weekday as 66. |
| begintime | hh:mm | 6/6 | Begin time of weekly schedule. |
| endtime | hh:mm | 6/6 | End time of weekly schedule.<br>(00:00 ~ 24:00 means always.) |
| action_do_i<0~<br>(ndo-1)>_enable | 0,<br>1 | 6/6 | To enable or disable trigger digital output.<br>0 => Disable<br>1 => Enable |
| action_do_i<0~<br>(ndo1)>_duration | 1~999 | 6/6 | The duration of digital output is triggered in seconds. |

| | | | |
|---|---|---|---|
| action_goto_<br>enable | 0,<br>1 | 6/6 | To enable or disable event goto function<br>0 => Disable<br>1 => Enable |
| action_goto_<br>name | string[40] | 6/6 | The selected name of preset positions |
| action_server<br>_i<0~4>_enable | 0,<br>1 | 6/6 | To enable or disable this server action.<br>The default value is 0.<br>0 => Disable<br>1 => Enable |
| action_server_<br>i<0~4>_media | NULL, 0~4 | 6/6 | The index of attached media. |

Group: **server_i<0~4>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| name | string[40] | 6/6 | The identification of this entry |
| type | email,<br>ftp,<br>http,<br>ns | 6/6 | Indicate the server type.<br>email => email server.<br>ftp => ftp server.<br>http => http server.<br>ns => network storage. |
| http_url | string[128] | 6/6 | The url of http server to upload. |
| http_username | string[64] | 6/6 | The username to login in the server. |
| http_passwd | string[64] | 6/6 | The password of the user. |
| ftp_address | string[128] | 6/6 | The ftp server address |
| ftp_username | string[64] | 6/6 | The username to login in the server. |
| ftp_passwd | string[64] | 6/6 | The password of the user. |
| ftp_port | 0~65535 | 6/6 | The port to connect the server. |
| ftp_location | string[128] | 6/6 | The location to upload or store the media. |
| ftp_passive | 0,<br>1 | 6/6 | To enable or disable the passive mode.<br>0 => disable the passive mode.<br>1 => enable the passive mode. |
| email_address | string[128] | 6/6 | The email server address |
| email_username | string[64] | 6/6 | The username to login in the server. |
| email_passwd | string[64] | 6/6 | The password of the user. |
| email_<br>senderemail | string[128] | 6/6 | The email address of sender. |
| email_<br>recipientemail | string[128] | 6/6 | The email address of recipient. |
| ns_location | string[128] | 6/6 | The location to upload or store the media. |
| ns_username | string[64] | 6/6 | The username to login in the server. |
| ns_passwd | string[64] | 6/6 | The password of the user. |
| ns_workgroup | string[64] | 6/6 | The workgroup for network storage. |

Group: **media_i<0~4>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| name | string[40] | 6/6 | The identification of this entry |
| type | snapshot,<br>systemlog,<br>videoclip | 6/6 | The media type to send to the server or store by the server. |
| snapshot_source | <integer> | 6/6 | Indicate the source of media stream.<br>0 => the first stream.<br>1 => the second stream and etc. |
| snapshot_prefix | string[16] | 6/6 | Indicate the prefix of the filename. |
| snapshot_<br>datesuffix | 0,<br>1 | 6/6 | To add date and time suffix to filename or not.<br>1 => to add date and time suffix.<br>0 => not to add it. |
| snapshot_<br>preevent | 0~7 | 6/6 | It indicates the number of pre-event images. |
| snapshot_<br>postevent | 0~7 | 6/6 | The number of post-event images. |
| videoclip_source | <integer> | 6/6 | Indicate the source of media stream.<br>0 => the first stream.<br>1 => the second stream and etc. |
| videoclip_prefix | string[16] | 6/6 | Indicate the prefix of the filename. |
| videoclip_<br>preevent | 0 ~ 9 | 6/6 | It indicates the time of pre-event recording in seconds. |
| videoclip_<br>maxduration | 1 ~ 10 | 6/6 | The time of maximum duration of one video clip in seconds. |
| videoclip_<br>maxsize | 50 ~ 1500 | 6/6 | The maximum size of one video clip file in Kbytes. |

Group: **record_i<0~1>**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| name | string[40] | 6/6 | The identification of this entry |
| enable | 0,<br>1 | 6/6 | To enable or disable this recoding.<br>0 => Disable<br>1 => Enable |
| priority | 0,<br>1,<br>2 | 6/6 | Indicate the priority of this recoding.<br>0 => low priority.<br>1 => normal priority.<br>2 => high priority. |
| source | <integer> | 6/6 | Indicate the source of media stream. |
| weekday | <interger> | 6/6 | Indicate which weekday is scheduled.<br>One bit represents one weekday.<br>Bit0 (LSB) => Saturday.<br>Bit1 => Friday.<br>Bit2 => Thursday.<br>Bit3 => Wednesday.<br>Bit4 => Tuesday.<br>Bit5 => Monday.<br>Bit6 => Sunday.<br>For example, to detect events on Friday and Sunday, set weekday as 66. |
| begintime | hh:mm | 6/6 | Begin time of weekly schedule. |
| endtime | hh:mm | 6/6 | End time of weekly schedule.<br>(00:00~24:00 means always.) |

| | | | |
|---|---|---|---|
| prefix | string[16] | 6/6 | Indicate the prefix of the filename. |
| cyclesize | <integer> | 6/6 | The maximum size for cycle recording in Kbytes. |
| maxfilesize | 50~6000 | 6/6 | The max size for one file in Kbytes |
| dest | 0~4 | 6/6 | The destination to store the recording data.<br>0~4 => the index of network storage. |

Group: **https**

| Name | Value | Security (get/set) | Description |
|---|---|---|---|
| enable | <boolean> | 6/6 | To enable or disable this secure http |
| status | -2 ~ 1 | 6/6 | Specify the https status.<br>-2 => invalid public key<br>-1 => waiting for certificated<br>0 => not installed<br>1 => active |
| countryname | string[2] | 6/6 | Country name in certificate information |
| stateorprovincename | string[128] | 6/6 | State or province name in in certificate information |
| localityname | string[128] | 6/6 | The locality name in certificate information |
| organizationname | string[64] | 6/6 | Organization name in certificate information |
| unit | string[32] | 6/6 | Unit name in certificate information. |
| commonname | string[64] | 6/6 | Common name in certificate information |
| validdays | 0 ~ 9999 | 6/6 | Certificatation valid period |

## Drive the digital output

**Note:** This request requires the privilege of viewer.

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/dido/setdo.cgi?do1=<state>[&do2=<state>][&do3=<state>][&do4=<state>]
[&return=<return page>]
```

Where state is 0, 1. “0” means inactive or normal state while “1” means active or triggered state.

| Parameter | Value | Description |
|---|---|---|
| do<num> | 0,<br>1 | 0 => inactive, normal state<br>1 => active, triggered state |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according the current path. If you omit this parameter, it will redirect to an empty page. |

**Example:** Drive the digital output 1 to triggered state and redirect to an empty page

```
http://myserver/cgi-bin/dido/setdo.cgi?do1=1
```

## Query status of the digital input

**Note:** This request requires the privilege of viewer.

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/dido/getdi.cgi?[di0][&di1][&di2][&di3]
```

If no parameter is specified, all the status of digital input will be returned.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: <length>\r\n
\r\n
[di0=<state>]\r\n
[di1=<state>]\r\n
[di2=<state>]\r\n
[di3=<state>]\r\n
```

where <state> can be 0 or 1.

**Example:** Query the status of digital input 1

```
Request:
http://myserver/cgi-bin/dido/getdi.cgi?di1

Response:
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: 7\r\n
\r\n
di1=1\r\n
```

## Query status of the digital output

**Note:** This request requires the privilege of viewer.

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/dido/getdo.cgi?[do0][&do1][&do2][&do3]
```

If no parameter is specified, all the status of digital output will be returned.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: <length>\r\n
\r\n
[do0=<state>]\r\n
[do1=<state>]\r\n
[do2=<state>]\r\n
[do3=<state>]\r\n
```

where <state> can be 0 or 1.

**Example:** Query the status of digital output 1

```
Request:
http://myserver/cgi-bin/dido/getdo.cgi?do1

Response:
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: 7\r\n
\r\n
do1=1\r\n
```

## Capture single snapshot

**Note:** This request require normal user privilege

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/viewer/video.jpg?[channel=<value>][&resolution=<value>][&quality=<value>]
```

If the user requests the size larger than all stream setting on the server, this request will failed!

| Parameter | Value | Default | Description |
|---|---|---|---|
| channel | 0~(n-1) | 0 | The channel number of video source |
| resolution | <available resolution> | 0 | The resolution of image |
| quality | 1~5 | 3 | The quality of image |

Server will return the most up-to-date snapshot of selected channel and stream in JPEG format. The size and quality of image will be set according to the video settings on the server.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: image/jpeg\r\n
[Content-Length: <image size>\r\n]

<binary JPEG image data>
```

## Account management

**Note:** This request requires administrator privilege

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/admin/editaccount.cgi?method=<value>&username=<name>[&userpass=<value>]
[&privilege=<value>][&privilege=<value>][…] [&return=<return page>]
```

| Parameter | Value | Description |
|---|---|---|
| method | add | Add an account to server. When using this method, “username” field is necessary. It will use default value of other fields if not specified. |
| | delete | Remove an account from server. When using this method, “username” field is necessary, and others are ignored. |
| | edit | Modify the account password and privilege. When using this method, “username” field is necessary, and other fields are optional. If not specified, it will keep original settings. |
| username | <name> | The name of user to add, delete or edit |
| userpass | <value> | The password of new user to add or that of old user to modify. The default value is an empty string. |
| privilege | <value> | The privilege of user to add or to modify. |
| | viewer | Viewer’s privilege |
| | operator | Operator’s privilege |
| | admin | Administrator’s privilege |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according to the current path. If you omit this parameter, it will redirect to an empty page. |

## System logs

**Note:** This request require administrator privilege

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/admin/syslog.cgi
```

Server will return the up-to-date system log.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: <syslog length>\r\n
\r\n
<system log information>\r\n
```

## Upgrade firmware

**Note:** This request requires administrator privilege

**Method:** POST

Syntax:

```
http://<servername>/cgi-bin/admin/upgrade.cgi
```

**Post data**:

```
fimage=<file name>[&return=<return page>]\r\n
\r\n
<multipart encoded form data>
```

Server will accept the upload file named <file name> to be upgraded the firmware and return with <return page> if indicated.

## Camera Control

**Note:** This request requires privilege of viewer

**Method:** GET/POST

Syntax:

```
http://<servername>/cgi-bin/viewer/camctrl.cgi?[channel=<value>][&camid=<value>][&move=<value>]
[&focus=<value>][&iris=<value>][&speedpan=<value>][&speedtilt=<value>][&speedzoom=<value>]
[&speedapp=<value>][&auto=<value>][&zoom=<value>][&speedlink=<value>][&return=<return page>]
```

| Parameter | Value | Description |
|---|---|---|
| channel | <0~(n-1)> | Channel of video source |
| camid | 0,<positive integer> | Camera ID |
| move | home | Move the Network Camera to home position |
| | up | Move the Network Camera up |
| | down | Move the Network Camera down |
| | left | Move the Network Camera left |
| | right | Move the Network Camera right |
| speedpan | -5 ~ 5 | Set the pan speed |
| speedtilt | -5 ~ 5 | Set the tilt speed |
| speedzoom | -5 ~ 5 | Set the zoom speed |
| speedapp | 1 ~ 5 | Set the auto pan/patrol speed |
| auto | pan | Auto pan |
| | patrol | Auto patrol |
| | stop | Stop camera |
| zoom | wide | To zoom for larger view with current speed |
| | tele | To zoom for farer view with current speed |
| sethome | define | Set current position as home position |
| | default | Using default home position |
| calibrate | go | Recalibrate the home position to the default center |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according to the current path. If you omit this parameter, it will redirect to an empty page. |

## Recall

**Note:** This request requires privilege of viewer

**Method:** GET

Syntax:

http://<servername>/cgi-bin/viewer/recall.cgi?recall=<value>[&channel=<value>][&return=<return page>]

| Parameter | Value | Description |
|---|---|---|
| recall | Text string less than 30 characters | One of the present positions to recall. |
| channel | <0~(n-1)> | channel of video source |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according to the current path. If you omit this parameter, it will redirect to an empty page. |

## System Information

**Note:** This request requires normal user privilege

**Method:** GET/POST

Syntax:

http://<servername>/cgi-bin/sysinfo.cgi

Server will return the system information. In HTTP API version 2, the CapVersion will be 0200. All the fields in the previous version (0100) is obsolete. Please use “getparam.cgi?capability” instead.

Return:

```
HTTP/1.0 200 OK\r\n
Content-Type: text/plain\r\n
Content-Length: <system information length>\r\n
\r\n
Model=<model name of server>\r\n
CapVersion=0200\r\n
```

| Parameter | Value | Description |
|---|---|---|
| Model | system.firmwareversion | Model name of server. Ex:IP3133-VVTK-0100a |
| CapVersion | MMmm, MM is major version from 00 ~ 99<br>mm is minor version from 00 ~ 99<br>ex: 0100 | The capability field version |

## Preset Locations

**Note:** This request requires operator privilege

**Method:** GET/POST

Syntax:

http://<servername>/cgi-bin/operator/preset.cgi?[channel=<value>][&addpos=<value>][&delpos=<value>][&return=<return page>]

| Parameter | Value | Description |
|---|---|---|
| addpos | <Text string less than 30 characters> | Add one preset location to preset list. |
| channel | <0~(n-1)> | Channel of video source |
| delpos | <Text string less than 30 characters> | Delete preset location from preset list. |
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according to the current path. If you omit this parameter, it will redirect to an empty page. |

## IP filtering

**Note:** This request requires administrator access privilege

**Method:** GET/POST

Syntax:

http://<servername>/cgi-bin/admin/ipfilter.cgi?method=<value>&[start=<ipaddress>&end=<ipaddress>][&index=<value>][&return=<return page>]

| Parameter | Value | Description |
|---|---|---|
| Method | addallow | Add a set of allow IP address range to server. Start and end parameters must be specified. If the index parameter is specified, it will try to add starting from index position. |
| | adddeny | Add a set of deny IP address range to server. Start and end parameters must be specified. If the index parameter is specified, it will try to add starting from index position. |
| | deleteallow | Remove a set of allow IP address range from server. If start and end parameters are specified, it will try to remove the matched IP address. If index is specified, it will try to remove the address from given index position. [start, end] parameters have higher priority than the [index] parameter. |
| | deletedeny | Remove a set of deny IP address range from server. If start and end parameters are specified, it will try to remove the matched IP address. If index is specified, it will try to remove the address from given index position. [start, end] parameters have higher priority than the [index] parameter. |
| start | <ip address> | The start IP address to add or to delete. |
| end | <ip address> | The end IP address to add or to delete. |
| index | <value> | The start position to add or to delete. |

| | | |
|---|---|---|
| return | <return page> | Redirect to the page <return page> after the parameter is assigned. The <return page> can be a full URL path or relative path according to the current path. If you omit this parameter, it will redirect to an empty page. |

## Get SDP of Streamings

**Note:** This request requires viewer access privilege

**Method:** GET/POST

Syntax:

```
http://<servername>/<network_rtsp_s<0~m-1>_accessname>
```

"m" is the stream number.

"network_accessname_<0~(m-1)>" is the accessname for stream "1" to stream "m". Please refer to the "subgroup of network: rtsp" for setting the accessname of SDP.

You can get the SDP by HTTP GET method.

## Open the network streamings

**Note:** This request requires viewer access privilege

Syntax:

For http push server (mjpeg):

```
http://<servername>/<network_http_s<0~m-1>_accessname>
```

For rtsp (mp4), user needs to input the url below for a rtsp compatible player.

```
rtsp://<servername>/<network_rtsp_s<0~m-1>_accessname>
```

"m" is the stream number.

For detailed streaming protocol, please refer to "control signaling" and "data format" documents.

# Technical Specifications

## System

- CPU: VVTK-1000 SoC
- Flash: 8MB
- RAM: 64MB
- Embedded OS: Linux 2.4

## Lens

- Board lens, f= 2.8mm~7.3mm, auto iris, 0.75m to infinity focus range

## Angle of View

- 28.7°~73.4° (horizontal)
- 21.6°~54.7° (vertical)
- 35.8°~92.2° (diagonal)

## Shutter Time

- 1/30 sec. to 1/15000 sec.

## Image Sensor

- SONY 1/4" progressive scan CCD sensor with VGA resolution

## Minimum Illumination

- 1.0 Lux/F1.0

## Video

- Compression: MJPEG & MPEG-4
- Streaming:
  Simultaneous dual-streaming
  MPEG-4 streaming over UDP, TCP, or HTTP
  MPEG-4 multicast streaming
  MJPEG streaming over HTTP
  Supports 3GPP mobile surveillance
- Resolutions:
  MJPEG & MPEG-4 video with resolution up to 640x480 (VGA)
- Frame rates: 640x480 up to 30fps

## Image Settings

- Adjustable image size, quality, and bit rate
- Time stamp and text caption overlay
- Flip & mirror
- Configurable brightness, contrast, saturation
- AGC, AWB, AES
- Backlight compensation (BLC)

## Pan/Tilt/Zoom

- Pan range: 350° (+175° ~ -175°)
- Tilt range: 125° (+90° ~ -35°)
- Auto pan mode
- Auto patrol mode
- 2.6x optical zoom

## Audio

- Compression:
  GSM-AMR speech compression, bit rate: 4.75 kbps ~12.2 kbps
  MPEG-4 AAC audio encoding, bit rate: 16 kbps ~128 kbps
- Interface:
  Built-in microphone
  External microphone input
  External/Internal microphone switch
- Supports two-way audio by SIP protocol
- Supports audio mute

## Networking

- 10/100 Mbps Ethernet, RJ-45
- Protocols: IPv4, TCP/IP, HTTP, HTTPS, UPnP, RTSP/RTP/RTCP, IGMP, SMTP, FTP, DHCP, NTP, DNS, DDNS, and PPPoE
- Built-in 802.11b/g WLAN (PZ7152)

## Alarm and Event Management

- Triple-window video for motion detection
- One DI and one DO for external sensor and alarm
- Event notification using HTTP, SMTP, or FTP

## Security

- Multi-level user access with password protection
- IP address filtering
- Wireless: WEP, WPA-PSK, WPA2 (PZ7152)

## Users

- Camera live viewing for up to 10 clients

## Dimension (including lens)

- 104.1mm(W) x 103.5mm(D) x 118mm(H)

## Weight (including lens)

- Net: 352g (PZ7151)
- Net: 371g (PZ7152)

## LED Indicator

- System activity and network link indicator

## Power

- 12V DC
- 802.3af compliant Power over Ethernet (PZ7151)
- Power consumption: max. 12W

## Approvals

CE, FCC, C-Tick, LVD, VCCI

## Operating Environments

- Temperature: 0°~50°C (32°~122°F)
- Humidity: 20%~80% RH

## Viewing System Requirements

- OS: Microsoft® Windows 2000/XP/Vista
- Browser: Internet Explorer 6.x or above
- Cell phone: 3GPP player
- Real Player: 10.5 or above
- Quick Time: 6.5 or above

## Installation, Management, and Maintenance

- Installation Wizard 2
- 16-CH recording software
- Supports firmware upgrade

## Applications

SDK available for application development and system integration

# Technology License Notice

## MPEG-4 AAC Technology

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# Electromagnetic Compatibility (EMC)

This device compiles with FCC Rules Part 15. Operation is subject to the following two conditions.

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

USA - This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a partial installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Shielded interface cables must be used in order to comply with emission limits.

Europe CE – This digital equipment fulfills the requirement for radiated emission according to limit B of EN55022/1998, and the requirement for immunity according to EN50082-1/1992.

Liability

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